JUNE 3, 1933

Railway Age

FOUNDED IN 1856

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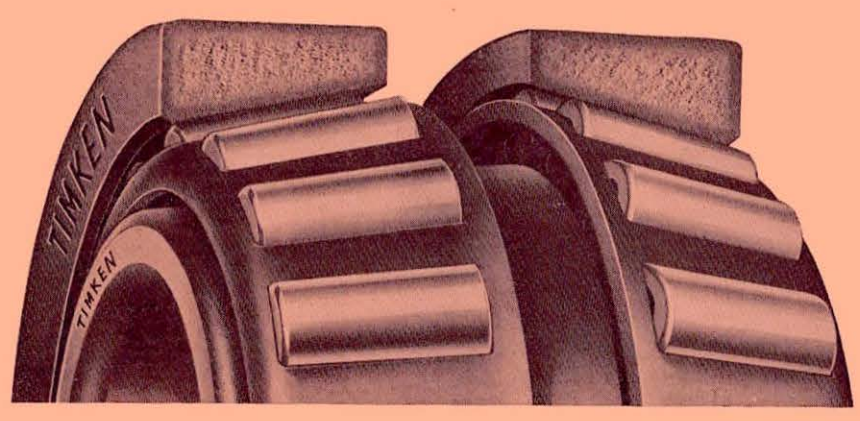
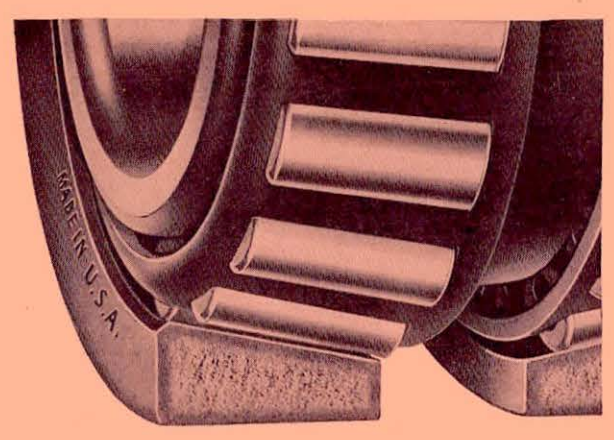


Tapered Roller
TIMKEN BEARING
EQUIPPED

TIMKEN'S RESPONSIBILITY TO THE RAILROADS



It is one thing to manufacture railroad bearings and another thing to make them work to the customer's satisfaction.

Timken sales policy goes much further than merely supplying bearings to railroad and equipment builders. It embraces complete engineering and maintenance service unequalled by any other bearing manufacturer.

Timken has always recognized its responsibility:

1—In developing, in conjunction with the railroads and equipment builders, the correct size of bearing required for every specific condition.

2—In assisting the railroads and equipment builders to select the proper mountings for the bearings.

3—In instructing the equipment builders in the correct assembly of the bearings.

4—In cooperating with the railroads in every conceivable way to assure maximum operating life.

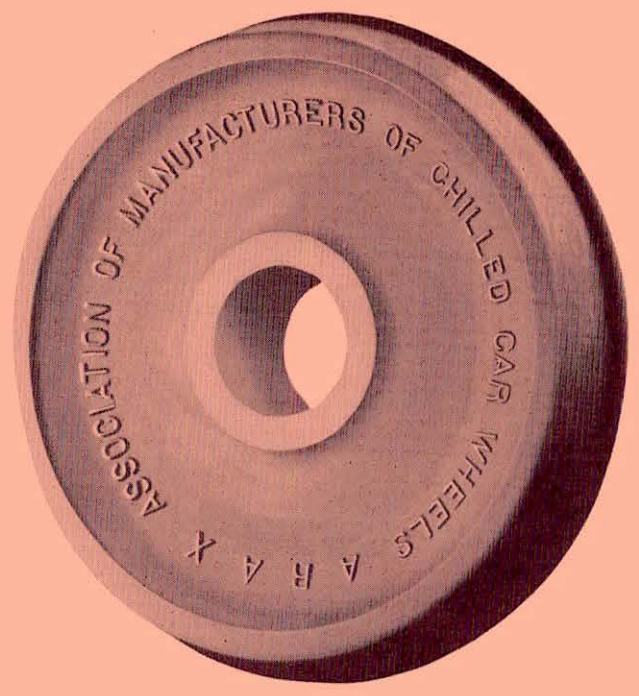
That is why Timken Bearings are giving such outstanding service on leading American railroads in all types of equipment.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

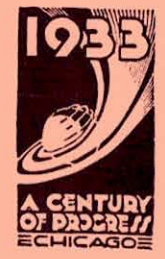
TIMKEN *Tapered Roller* BEARINGS

Association of Manufacturers of Chilled Car Wheels

VISIT OUR EXHIBIT BOOTH A GROUP 10 FIRST FLOOR TRAVEL AND TRANSPORT BUILDING



AT THE CENTURY OF PROGRESS



The Century of Progress Exhibition at Chicago will depict in many forms the progress made in many industries during the past century. The members of this Association (listed below) have materially contributed to the progress made in railroading.

Their research has made possible the development of wheels that not only stand the tests of time but wheels that carry the principal burden of transportation safely and economically. The CHILLED CAR WHEEL stands for PROGRESS.

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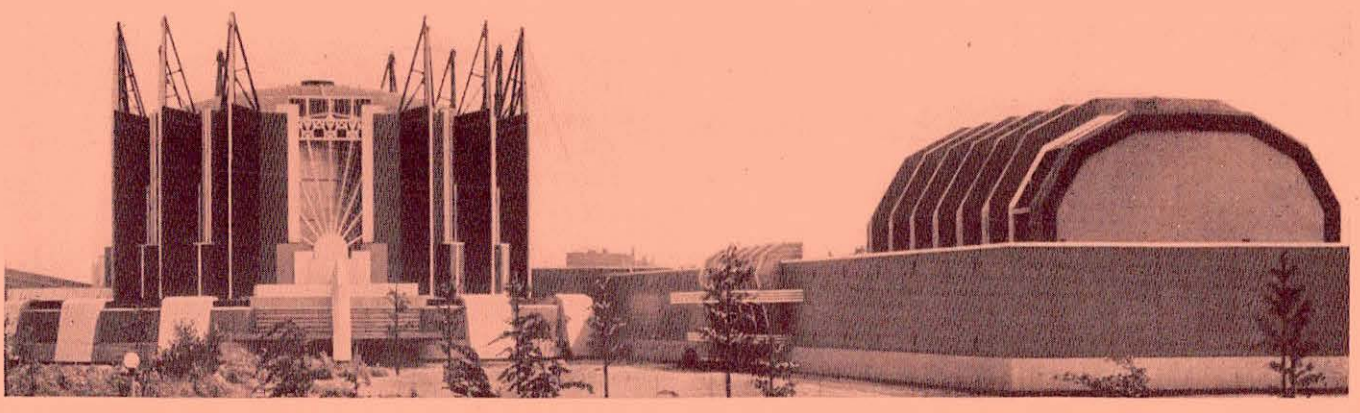

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FRICTION DRAFT GEARS

Miner Class A-2-XB Gear
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These devices are great achievements in mechanical design and metallurgy. They not only conform to American Railway Association specifications but are capable of sustaining a uniformly high capacity during an endurance test continued many times longer than the standard requirements. Miner Draft Gears are worthy of the confidence extended by the many railroads who know from experience that these devices produce maximum long term efficiency in the most severe service.

W. H. MINER, INC. CHICAGO

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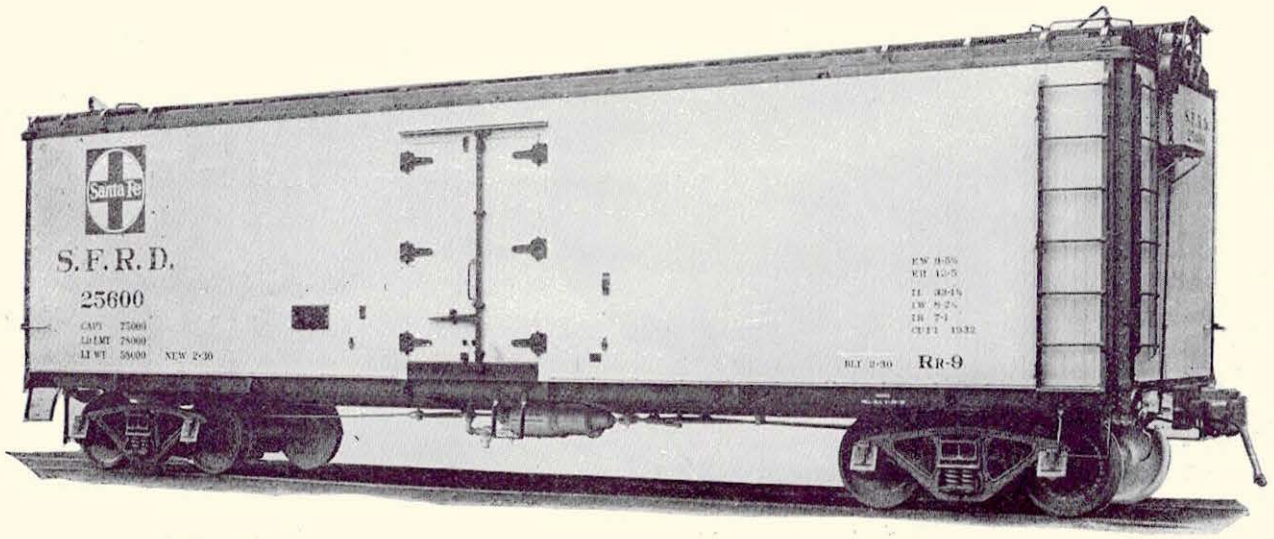

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Single copies, 25 cents each.

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name registered U. S. Patent Office.

Vol. 94 June 3, 1933 No. 22

In This Issue

Pullman Aluminum Cars Mark New Era in Car Construction . . . Page 789

An article describing one of these new light-weight units which point the way to higher train speeds, more economical operation and increased earnings in passenger service.

Balancing Supply and Demand in Crossties 794

Dr. Julius H. Parmelee, director of the Bureau of Railway Economics, presents a study of future requirements, based on a statistical analysis of tie renewals since 1923.

Depletion of Railway Supplies Grows 803

An analysis of stock figures which points out that inventories for maintenance are not as plentiful as book values indicate.

EDITORIAL

"Public Works" and the Transportation Industry 787

GENERAL ARTICLES

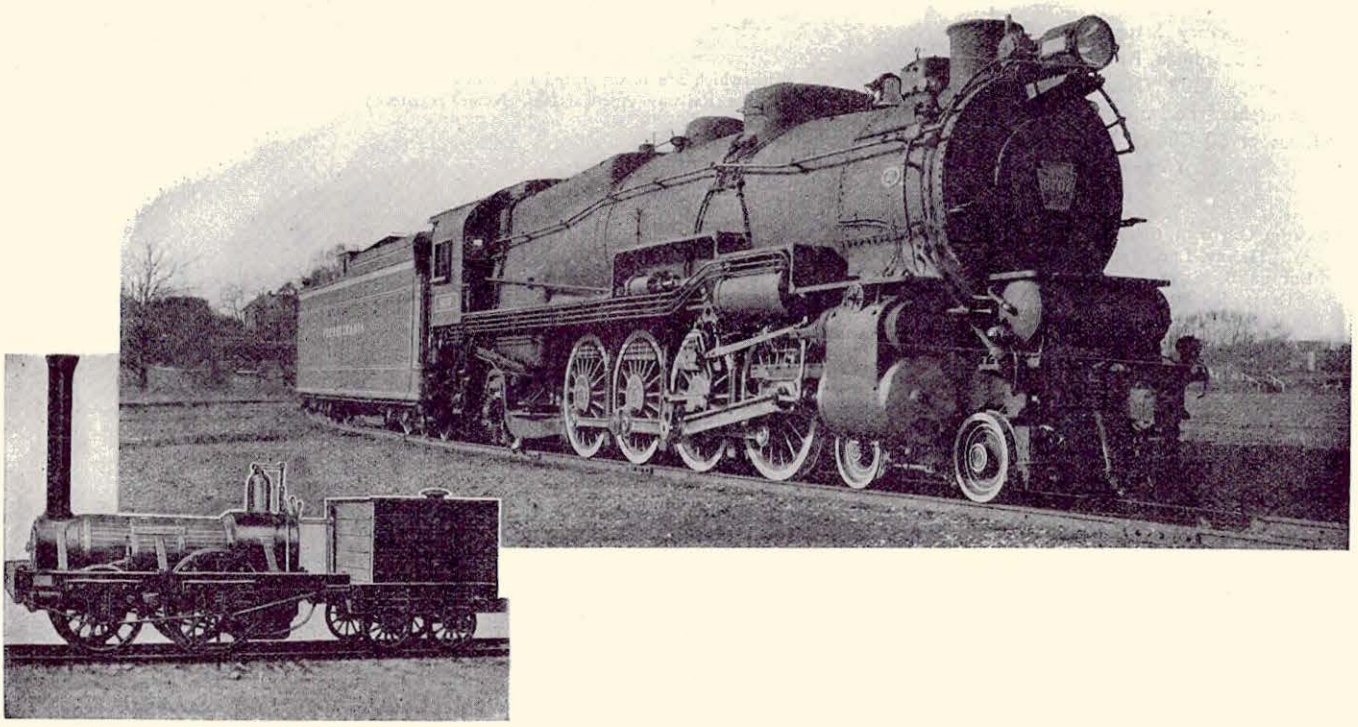
Pullman Aluminum Cars Mark New Era in Car Construction 789
Freight Car Loading Again Above Last Year 793
Balancing Supply and Demand in Crossties, by Dr. Julius H. Parmelee 794
Howard L. Ingersoll Honored by Franklin Institute 796
Railways Oppose General Freight Rate Reduction 797
Telephone Communication System for Freight Trains 801
Depletion of Railway Supplies Grows 803
Railroad Bill Passed by Senate 805

COMMUNICATIONS 807

ODDS AND ENDS 808

NEWS 809

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service



"ONE LOCOMOTIVE"—

describes either of those shown above.

It may also describe any one of the 55,000 locomotives on American railroads today.

BUT—

it does not always mean a serviceable, income-producing locomotive even when applied to those in daily operation.

Only when referring to a modern locomotive does it indicate an efficient, economical, income-producing unit.

There are only about 10,000 such locomotives in the United States today.

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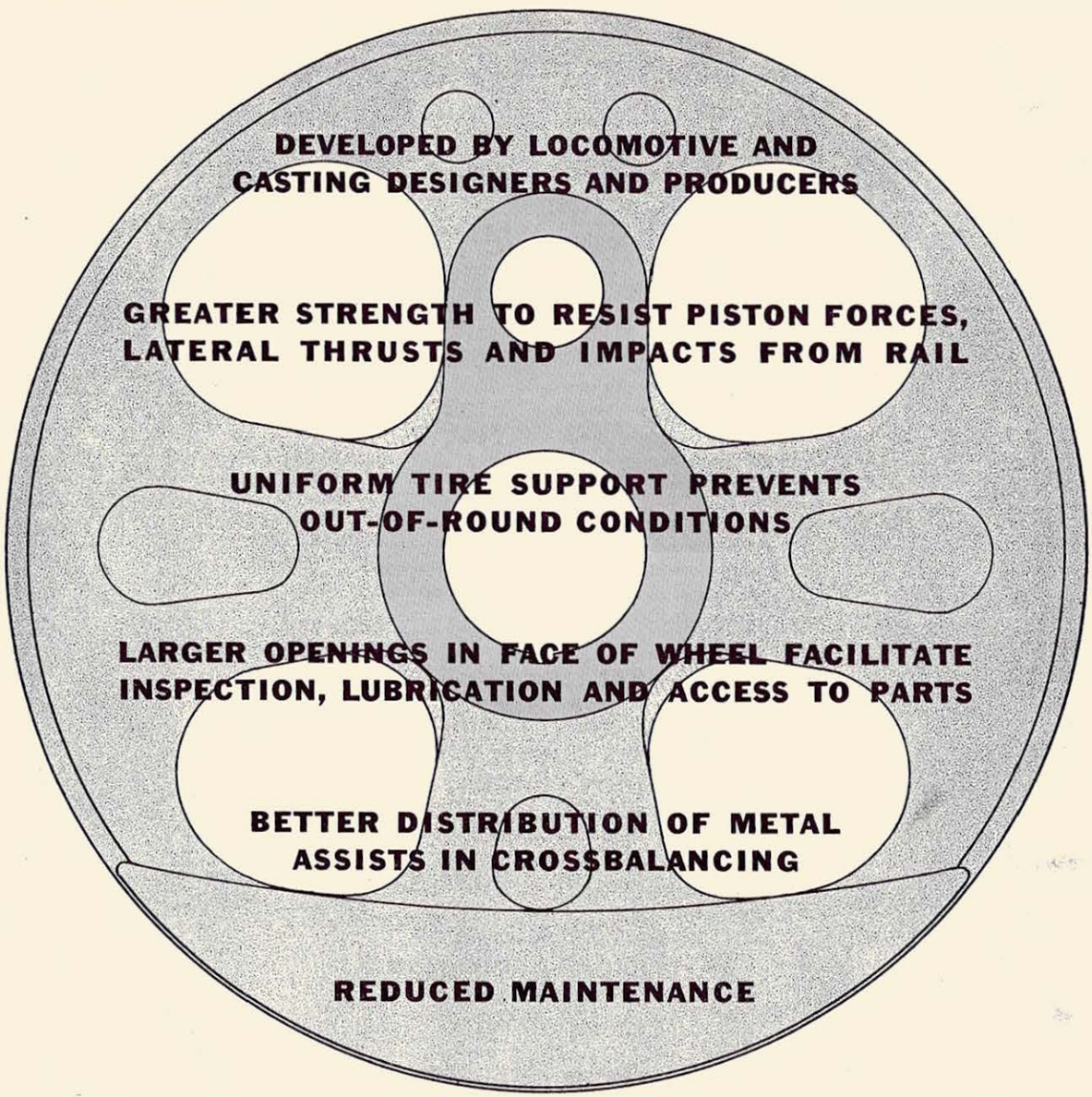
DEVELOPED BY LOCOMOTIVE AND CASTING DESIGNERS AND PRODUCERS
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UNIFORM TIRE SUPPORT PREVENTS OUT-OF-ROUND CONDITIONS
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BETTER DISTRIBUTION OF METAL ASSISTS IN CROSSBALANCING
REDUCED MAINTENANCE

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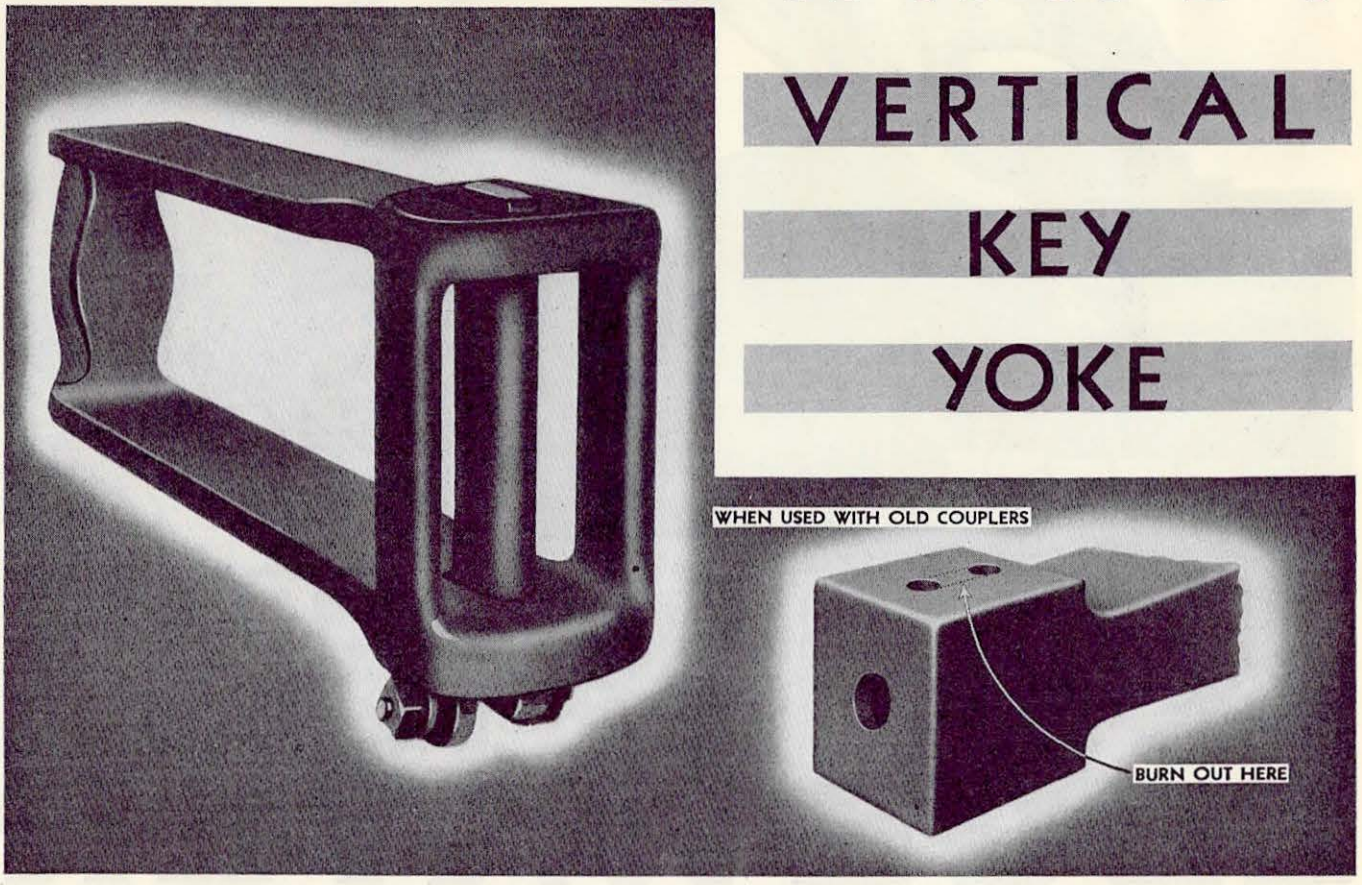

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GREATER STRENGTH
LESS MAINTENANCE
REPLACES RIVETED YOKES

AMERICAN STEEL FOUNDRIES

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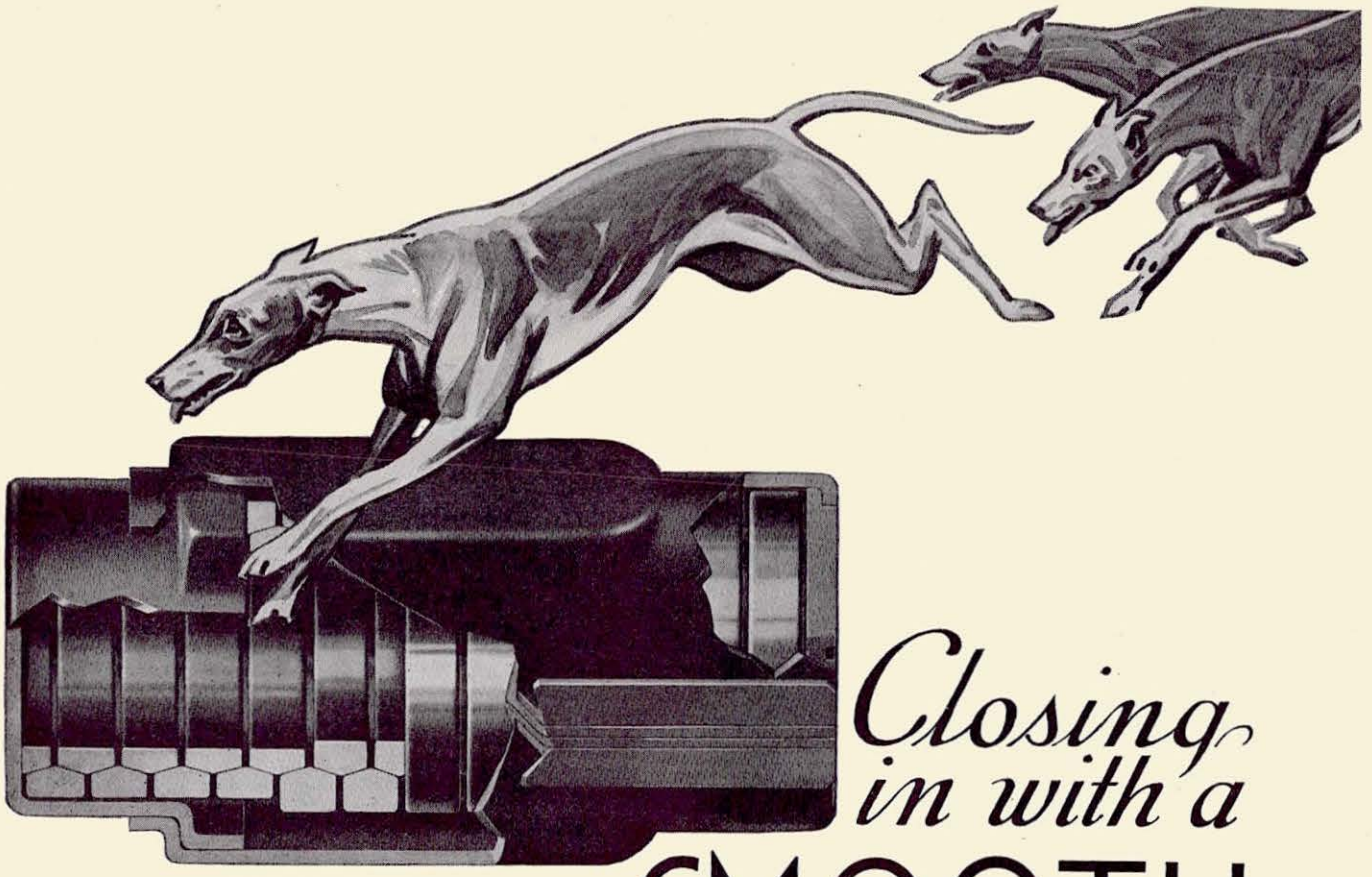

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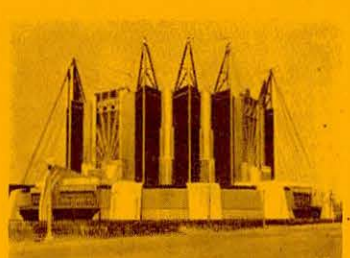

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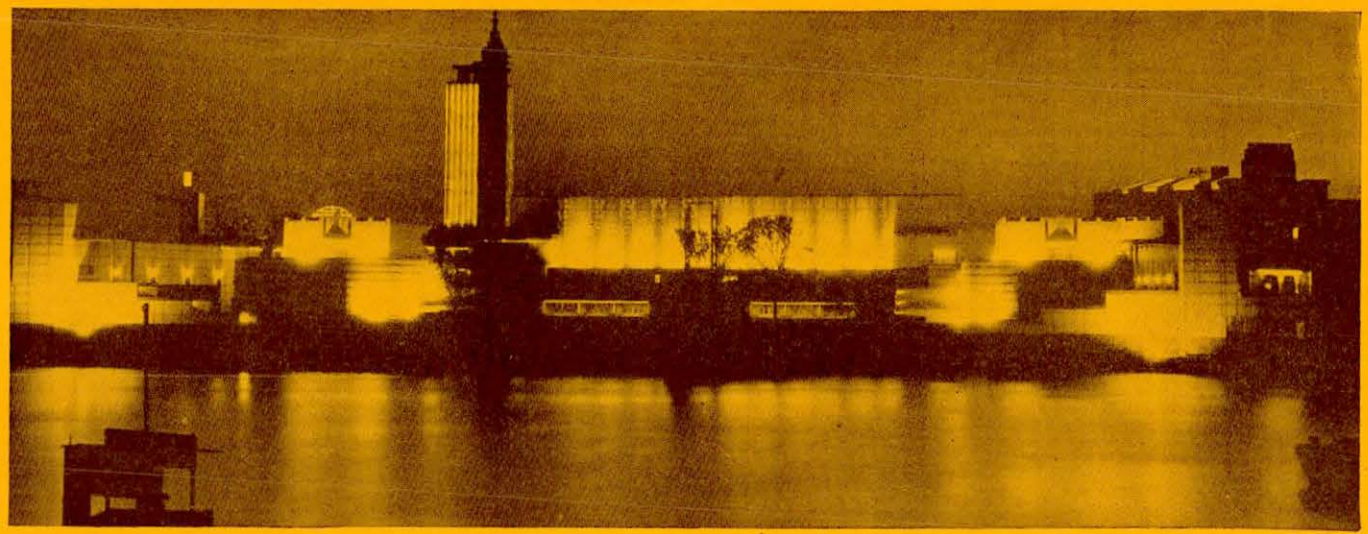

The Century of Progress Exposition. Hall of Science from Lake Michigan.

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Six years before the World's Columbian Exposition, the first "World's Fair", Dearborn was established. Engineering then was by no means as far advanced as it is today. And knowledge of scientific correction of boiler water troubles was in its infancy.

Dearborn pioneered in water correction, setting up the Dearborn Laboratories, treating harmful conditions scientifically *for the first time.* When the World's Fair arrived in 1893, Dearborn was well established and doing a great work in overcoming the trouble with scale, pitting, corrosion and foaming.

Since that time, each year has enriched our experience, enlarged the territory we serve and through constant research, has improved our methods. Pioneers still in active research, it is not strange that Dearborn today offers the most comprehensive water treating and consulting service available anywhere. It is not strange that railroads on every continent depend upon Dearborn for efficiency and economy in overcoming their troublesome water problems.

Spanning the years with progress, Dearborn welcomes the Century of Progress which so wonderfully contrasts the old and the new. When you visit the Fair this summer, look in upon us, visit our factory and laboratories and see how splendidly equipped we are to serve you. Address us at 310 South Michigan Avenue, Chicago; 205 East 42nd Street, New York; 2454 Dundas Street, W., Toronto.

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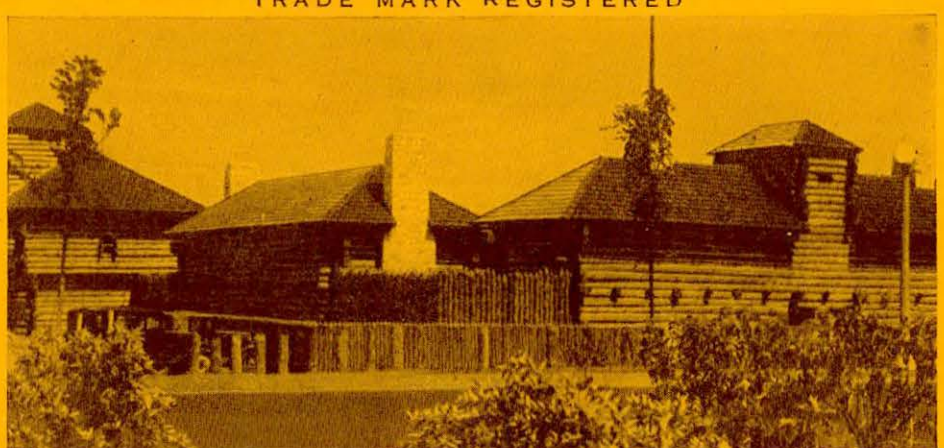

1933 A CENTURY OF PROGRESS CHICAGO

1933 A CENTURY OF PROGRESS CHICAGO

Replica of Fort Dearborn at the Century of Progress. Block house at left has long been a part of the Dearborn trade mark.

ECONOMIC LOSS

can be

REDUCED

by Equipping Freight Cars

with

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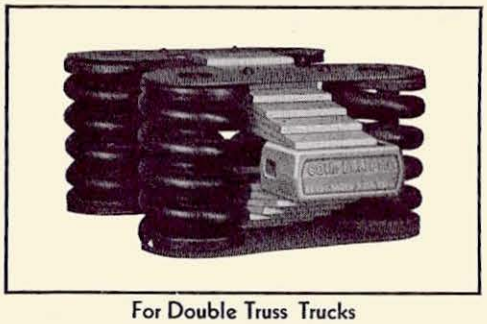
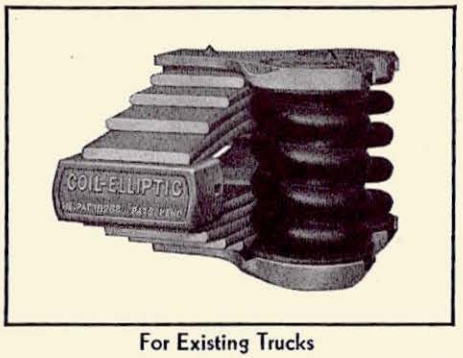
TRUCK SPRINGS

All coil springs have definite periods of vibration and can be set in violent action when external loads are applied at regular intervals which correspond with these periods.



For Double Truss Trucks

Intermittent road shocks from rail joints synchronize with the periods of vibration of COIL SPRINGS in freight car trucks and result in violent cumulative oscillations which cause excessive and unnecessary DAMAGE not only to LADING but to the CAR STRUCTURE and ROAD-BED.



For Existing Trucks

A combination of coils and elliptics with a proper ratio of capacities, as in the "COIL-ELLIPTIC" spring groups, eliminates this synchronous vibration and reduces materially the DAMAGE resulting from UNCONTROLLED SPRING ACTION.

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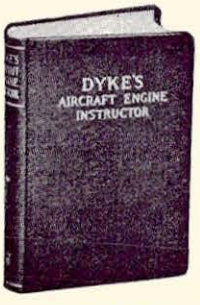
By **A. L. DYKE**



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FRANK T. HYPPS, Ph. D.
and JAMES M. HERRING, Ph. D.

Wharton School of Finance and Commerce
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The regulation of the financial affairs of railroads by the Federal government through the Interstate Commerce Commission, under the Transportation Act of 1920, is herein clearly explained. Various tests applied by the Commission in determining the elements of public interest to which the statute usually refers are traced, together with the nature and reasons for the Commission's action.

The granting of certificates of public convenience and necessity for the construction and abandonment of railroads, the regulation of unification through acquisition of control of one carrier by another, the regulation of interlocking directorates and the issuance of the various types of railroad securities are expertly examined. Accounting practices are touched upon.

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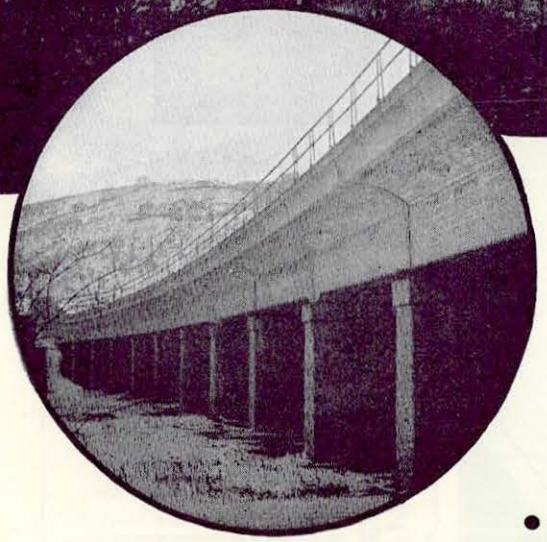


This unretouched photograph of the Streets Run Bridge was taken in 1933. It shows accurately the excellent condition of the concrete today.

BUILT TO LAST

• This is one of the first large railroad jobs where the quality of the concrete was controlled in accordance with the water-cement ratio law.

• Since 1925, this concrete bridge has been carrying the heavy traffic of the Pennsylvania main line across Streets Run, at Hays, near Pittsburgh, Pa.

• It is also one of the first railroad bridges to employ 40-foot reinforced concrete girders. This span was found to be economical for the conditions. While involving many principles then relatively new, the construction operations were carried through without difficulty—without serious interruption to traffic.

• Concrete—Quality Controlled is concrete that will last under severe service conditions.

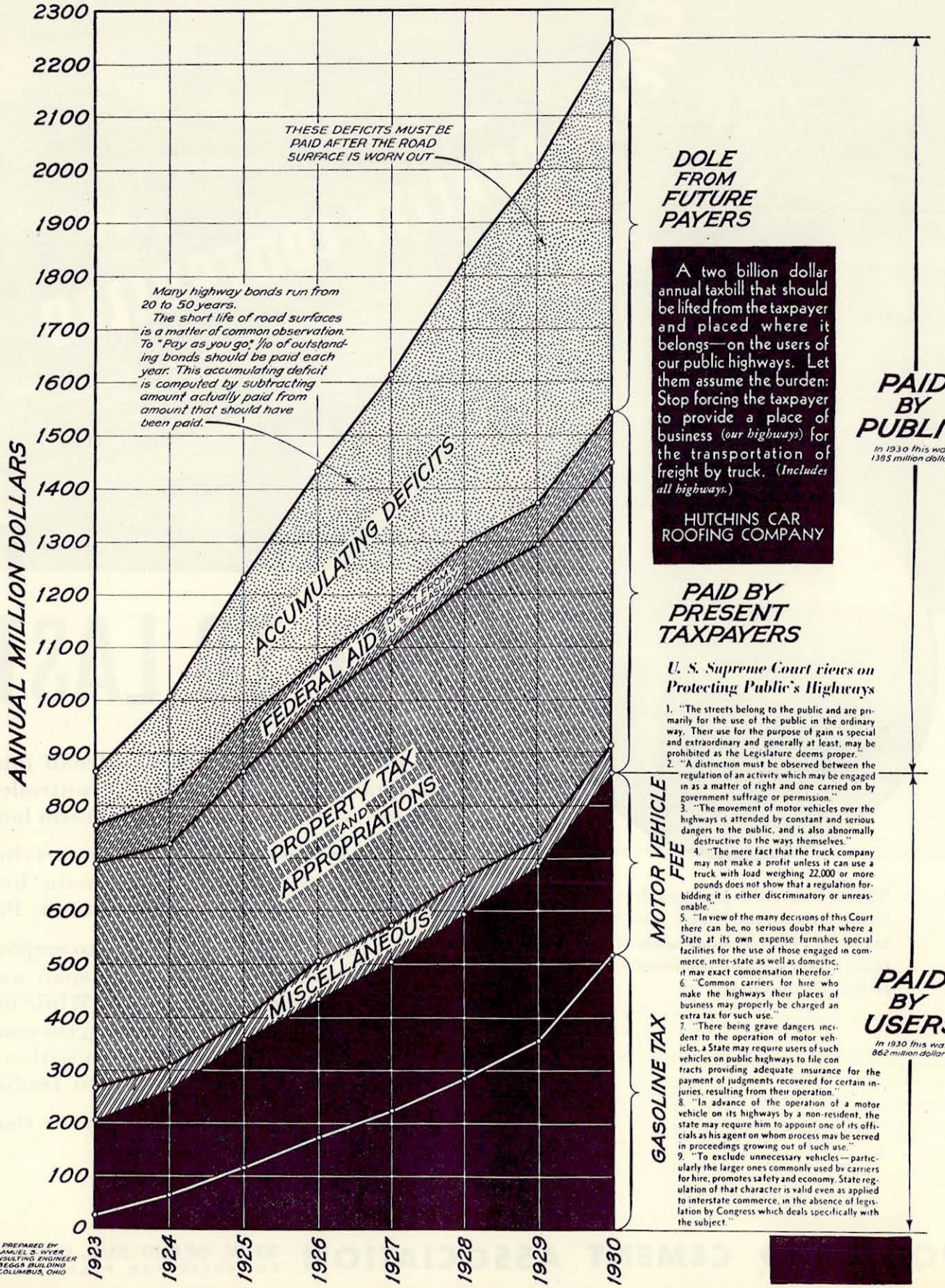
• Information on request.

PORTLAND CEMENT ASSOCIATION 33 W. GRAND AVE., CHICAGO
CONCRETE FOR PERMANENCE

PUBLIC'S INTEREST IN PROTECTING ITS HIGHWAYS

"USER'S" AND "PUBLIC'S" RELATIVE CONTRIBUTION TO RURAL HIGHWAY COSTS IN THE UNITED STATES FROM 1923 TO 1930

BASED ON DATA FROM U.S. BUREAU OF ROADS



A two billion dollar annual taxbill that should be lifted from the taxpayer and placed where it belongs—on the users of our public highways. Let them assume the burden: Stop forcing the taxpayer to provide a place of business (*our highways*) for the transportation of freight by truck. (*Includes all highways.*)

HUTCHINS CAR ROOFING COMPANY

U. S. Supreme Court views on Protecting Public's Highways

1. "The streets belong to the public and are primarily for the use of the public in the ordinary way. Their use for the purpose of gain is special and extraordinary and generally at least, may be prohibited as the Legislature deems proper."
2. "A distinction must be observed between the regulation of an activity which may be engaged in as a matter of right and one carried on by government suffrage or permission."
3. "The movement of motor vehicles over the highways is attended by constant and serious dangers to the public, and is also abnormally destructive to the ways themselves."
4. "The mere fact that the truck company may not make a profit unless it can use a truck with load weighing 22,000 or more pounds does not show that a regulation forbidding it is either discriminatory or unreasonable."
5. "In view of the many decisions of this Court there can be, no serious doubt that where a State at its own expense furnishes special facilities for the use of those engaged in commerce, inter-state as well as domestic, it may exact compensation therefor."
6. "Common carriers for hire who make the highways their places of business may properly be charged an extra tax for such use."
7. "There being grave dangers incident to the operation of motor vehicles, a State may require users of such vehicles on public highways to file contracts providing adequate insurance for the payment of judgments recovered for certain injuries, resulting from their operation."
8. "In advance of the operation of a motor vehicle on its highways by a non-resident, the state may require him to appoint one of its officials as his agent on whom process may be served in proceedings growing out of such use."
9. "To exclude unnecessary vehicles—particularly the larger ones commonly used by carriers for hire, promotes safety and economy. State regulation of that character is valid even as applied to interstate commerce, in the absence of legislation by Congress which deals specifically with the subject."

PREPARED BY SAMUEL S. WYER CONSULTING ENGINEER BEGGS BUILDING COLUMBUS, OHIO

RAILWAY AGE

"Public Works" and the Transportation Industry

Enormous expenditures for highway construction figure importantly in the Administration's "public works" program, and further development of inland waterways is also included. Coming on top of the postponement by the government of measures to relieve unregulated competition with the railways, these projects, unless carefully safeguarded, must be regarded by railroad men with concern. The depressed condition of railway traffic, due in important measure to unregulated competition from other forms of transport, operating in many cases at less than cost and paying starvation wages, is one of the fundamental factors which have made the depression so deep and which must be corrected before recovery can be complete. The importance of this situation and the proper method for correcting it were recognized by the President himself in his masterful Salt Lake City address during the campaign.

To date, however, the measures which have been proposed to improve the railway situation have included none to relieve them and their employees from this competition. The proposal to spend hundreds of millions on additional road building and waterways, unless adequate regulation of and tolls from the users of such services are first provided, will simply mean that much more of a subsidy for railway competitors and will be a depressing factor rather than one promoting recovery.

Local Roads and Grade Crossings

There is, however, in the road building provisions of the public works bill at least a hint of recognition by the government of the need for a change in its policy regarding federal aid to highways. Up to the present time such assistance has been restricted to heavy-duty roads connecting established centers of population, in direct competition with the railways. The new public works bill provides that the sums appropriated under it may be utilized not alone on such projects but also on extensions of federal aid roads "into and through municipalities," to grade crossing elimination, to the construction of by-passes and footpaths and to the elimination of other hazards to pedestrian and vehicular traffic. More significant even than this change, however, is the provision that sums appropriated under the act may, with the approval of the Secretary of Agriculture, be used for the construction of "secondary or feeder roads." Whether the appropriation of $400,000,000 for roads, therefore, is to be expended largely on heavy-duty highways—another huge subsidy to trucks—or will be spent for projects which do not compete with the railways, lies largely in the detailed allocation of the funds. It thus becomes more important than ever that the Bureau of Public Roads be taken out of the hands of the pro-truck partisans who now dominate it and placed in those of competent administrators whose impartiality cannot be questioned.

It is perfectly possible to administer this fund, or to raise it in such a way, so that it will not compete unfairly with private industry. If the appropriation is largely withheld from heavy-duty city-to-city highways, which plainly involve a wasteful duplication of investment in transportation facilities, and instead is devoted to spreading the network of light-duty highways into areas not now reached by modern transportation and to such projects as grade crossing elimination, then unfair competition with the railways will be avoided and the capital will be invested where it will actually make some contribution to general economic well-being. This, in our opinion, is the only kind of road construction which, speaking generally, can be justified at all at the present time.

Higher Gas Tax Unfair to Motorists

If, however, the funds are largely used for heavy-duty roads paralleling the railways, then it is apparent that pouring hundreds of millions into such construction will be a grave menace to the railroads and their employees unless such projects are made self-liquidating—that is, paid for entirely by the users of such roads. Some appreciation of this viewpoint seems already to be abroad in Washington, and there is a disposition to liquidate a portion of such expenditures by an increase in the federal levy on gasoline.

This, in our opinion, would be unwise; and unfair

both to private motorists and consumers of gasoline who do not use the highways. The gasoline levy, as we have pointed out many times, bears much more heavily on the light vehicle in proportion to its ton-mile utilization of the roads than it does upon the heavy commercial vehicle. Moreover, federal aid roads between centers of population are built to much higher standards of weight and width, and grade and curvature elimination than are required for light vehicles, in order that they may accommodate heavy commercial traffic which practically nowhere is assessed adequately to cover the added expense which it necessitates. Private motorists and casual users of light commercial vehicles are paying more than their proportionate share of total highway costs as it is. If most of the hundreds of millions which it is proposed to spend on roads is to be spent for projects similar to federal aid roads so far built, then the obvious place to lay the burden of the cost is on interstate commercial traffic, either by federal license fees or a levy on ton-miles or vehicle-miles, rather than by a gasoline tax which would fall disproportionately upon private motorists and gasoline consumers who do not use the highways.

Highways vs. Public Buildings

There are definite safeguards, then, which can and should be adopted if vast expenditures are to be made on highways to keep such outlays from competing unfairly with tax-yielding transportation. Aside from that, it is clear that claims which have been made and widely circulated by highway men as to the work-making nature of road construction as compared with other building are extravagant in the extreme. The Bureau of Public Roads, for instance, with its characteristic freedom in interpreting figures to suit its thesis, has estimated that as much as 91 per cent of the money spent for concrete roads goes for wages and salaries. Commenting on this, the New York Herald-Tribune says:

> We have examined carefully the study of cost distribution made by the United States Bureau of Public Roads. It shows that only 14.1 per cent of the highway construction dollar goes to labor "on the job"; but by including the labor used in producing the materials and machinery and in transporting them, by including the cost of office forces, etc., the statistician finds himself able to say "it seems probable that of the total expenditures for road construction at the present time nearer 85 than 75 per cent may be directly traced into the hands of labor." Then he adds that "a part of the money paid to owners [of property, land, royalties, etc.] is immediately re-invested or expended. . . And since, of the money so re-invested in productive industry, labor again receives the major part, it is not unreasonable to suggest that as much as 90 per cent and probably more of the original expenditure for a concrete pavement ultimately finds its way into wages and salaries". . .
>
> By the same process of reasoning a greater part of the cost of any form of construction can be traced back to human effort. . . Let us assume that a town wanted to build a highway to cost $100,000 and a school to cost a like amount. In prosperous times it would have had the money for both. At present it can afford only one. Would the construction of the schoolhouse not furnish more employment "on the job" than would the highway? It would be equally possible to trace back to labor the other expenditures on each.
>
> We still believe that of all forms of useful construction expenditures those for highways furnish the best basis for necessary curtailment at present.

In our opinion, railway employees and railway owners—who include directly and indirectly the great majority of the American people—have a right to feel that regulation of competing forms of transportation is quite as important and necessary an emergency measure as any so far proposed for improving industrial stability and that it should not be postponed as it has been. We believe that there is grave doubt whether expenditures on highways or waterways can be as effective as those for buildings and other projects as a measure of unemployment relief. If, however, highways are to be built, then certainly the place to build them is in places suffering from a lack of adequate transportation rather than in places suffering even more acutely from an oversupply. Finally, if the present (as we believe) unsound practice of restricting federal road activity largely to heavy-duty highways between centers of population is continued, then the very least that should be done is to make such expenditures self-liquidating by a levy on interstate commercial traffic. Similarly, there can be no justification for expenditures on inland waterways — our transportation plant being already overexpanded—unless the users, by their willingness to pay the total costs of such service, give evidence of an honest belief that its economy is superior to that of facilities already available.

Loans or Donations to Transportation?

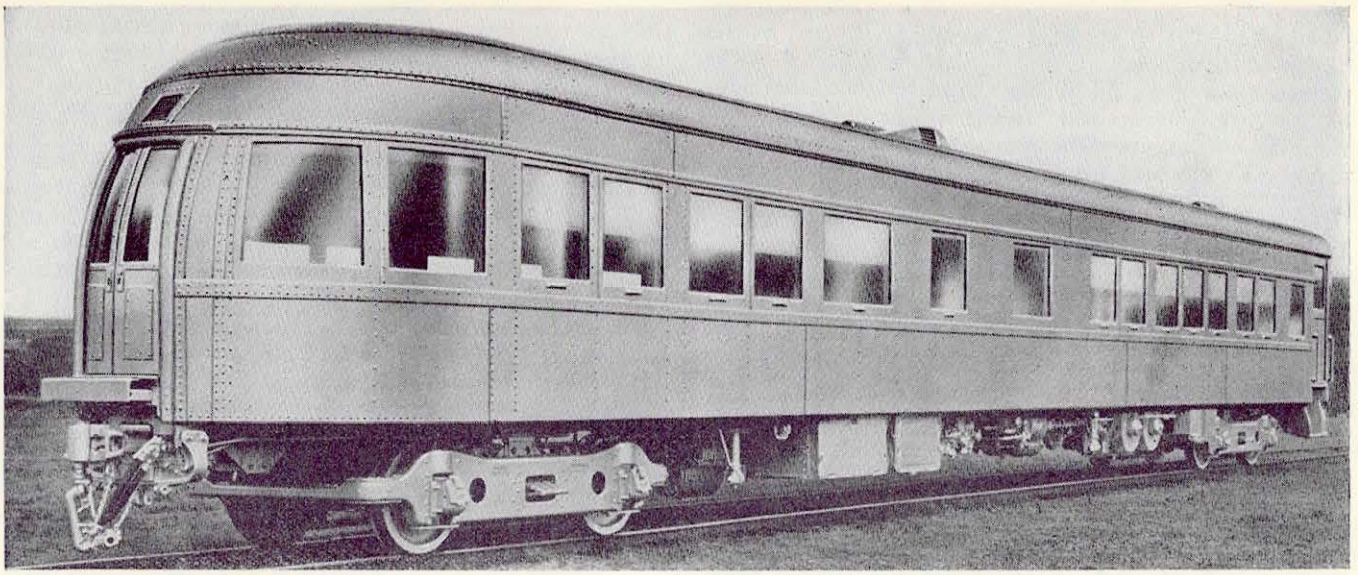
By contrast with the proposed expenditures on highways and waterways in the public works bill, there is a provision for *lending* aid in financing "such railroad maintenance and equipment as may be approved by the Interstate Commerce Commission." In the *Railway Age* of May 20 we pointed out how widely railway expenditures permeate all industry—certainly as thoroughly as those on "public works" of whatever kind. In the use of public credit to stimulate industry, the taxpayers may well ask themselves which is the better course from their point of view—to *lend* money to encourage railway activity, and purchases or to *donate* similar sums to the railways' competitors.

Heavy Trucking Against Interests of Private Motorists

"Engineers who have studied the question of the highway deficit, *i.e.*, the failure of motor vehicles as a whole to pay their way, have given the private passenger car and other vehicles of comparable weights, a clean bill of health. They are paying their share and more. The entire trouble is due to the fact that the exceedingly heavy vehicles have not been made to pay for the immensely increased costs of highway construction and upkeep which they alone have caused.

"In this view I think it is evident that the private passenger car owner and the general property taxpayer (often one and the same person) have a common interest in the movement to curb the excessive size of trucks and get the 'box cars' off the public roads and back to the rails where they belong."

From an Address by C. D. Sudborough, General Traffic Manager, P. R. R.



Aluminum Observation Coach of the Pullman Car & Manufacturing Corporation

Pullman Aluminum Cars Mark New Era in Car Construction

Point the way to higher train speeds, more economical operation and increased earnings in passenger service

A METHOD of saving approximately 50 per cent in passenger-car weight, without the sacrifice of essential strength or carrying capacity, is the latest Pullman contribution to better railroading. The suggestion is made in the form of two all-aluminum cars, exhibited at the Century of Progress Exposition, Chicago. The larger of these cars is an 84-ft. observation-room car, designed jointly by the Pullman Company and the Pullman Car & Manufacturing Corp., and intended for operation in regular main-line passenger-train service. The other car is a 79-ft. observation coach, designed by the Pullman Car & Manufacturing Corporation for main-line service and particularly adapted, becauses of its light weight, to use as a motor-train trailer.

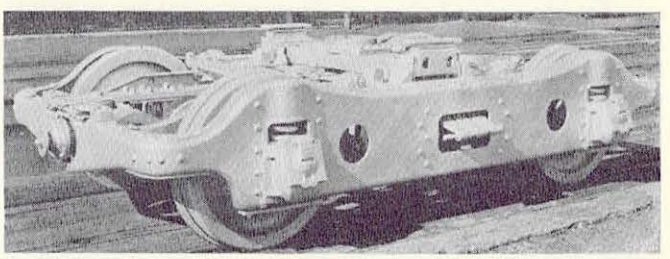
Both cars, built at the Pullman Car Works, Chicago, are outstanding examples of engineering design and metal craftsmanship. Of striking beauty inside and out, these cars are completely appointed; equipped with the improved P. C. & M. C. air-conditioning system; especially constructed to exclude dirt and dampen noise and vibration at all speeds, and provided with modified streamline observation ends to reduce air resistance. The cars constitute, in effect, the third great evolution in Pullman construction: Namely, wood, in 1859; steel, in 1907; and lighter cars of equivalent strength (in this instance, embodying aluminum construction) in 1933.

The primary objective of the last step mentioned is to co-operate with the railroads in developing light-weight passenger equipment which, in accordance with modern demands, will be safe to operate at high speeds; possess comfort and aesthetic features, assuring maximum passenger appeal; and, therefore, help to build up passenger traffic and earnings. Important attendant advantages anticipated as a result of the use of lighter equipment include appreciable reductions in several items of operating expense, as well as reduced track and equipment maintenance.

The aluminum observation-room car, which was the subject of a comprehensive illustrated address by Peter Parke, chief engineer of the Pullman Company, before the May 19 meeting of the New York Railroad Club, will be described in a subsequent issue of the *Railway Age*.

Principal Features of the Aluminum Observation Coach

The aluminum observation coach, which is a product of the Pullman Car & Manufacturing Corporation, has a seating capacity of 50 and weighs 73,880 lb., of which 6,880 lb. constitutes the weight of the air-conditioning equipment. While no car of identical design and capacity has ever been built of steel, and an exact comparison of weights is, therefore, impossible, it is estimated that a



The Four-Wheel Fabricated Aluminum Truck

saving of at least 50 per cent in weight is effected by the present construction.

Strong aluminum alloys, furnished by the Aluminum Company of America and having various physical properties, dependent upon the needs, are used for all parts of the car structure except the wheels, axles, springs, brake shoes and certain other parts subject to wear, which are all of steel or steel-faced for greater durability. In the car design due account has been taken of the greater deflection of aluminum, in the ratio of 3 to 1 to that of steel, and its higher co-efficient of expansion, which is twice that of steel. The finished car strikingly illustrates how these particular problems can be solved and an outstanding reduction in weight secured without sacrificing strength or safety.

General Dimensions and Weights of the P. C. & M. C. Aluminum Observation Coach

Length over body end sills	73 ft. 5½ in.
Length between truck centers	56 ft. 0 in.
Length over buffer uncoupled	78 ft. 10⅛ in.
Width over side posts	9 ft. 9⅜ in.
Width overall at eaves	10 ft. 1 in.
Height, top of rail to bottom of side sills	3 ft. 5½ in.
Height, track to top of roof at center	13 ft. 1 in.
Distance, end sill to buffer beam (vestibule end)	2 ft. 9 in.
Seating capacity	50
Total weight of car (excluding air-conditioning equip.)	67,000 lb.
Weight of air-conditioning equipment	6,880 lb.
Weights (including air-conditioning equipment)	
Car body	55,880 lb.
Trucks	18,000 lb.
Total	73,880 lb.

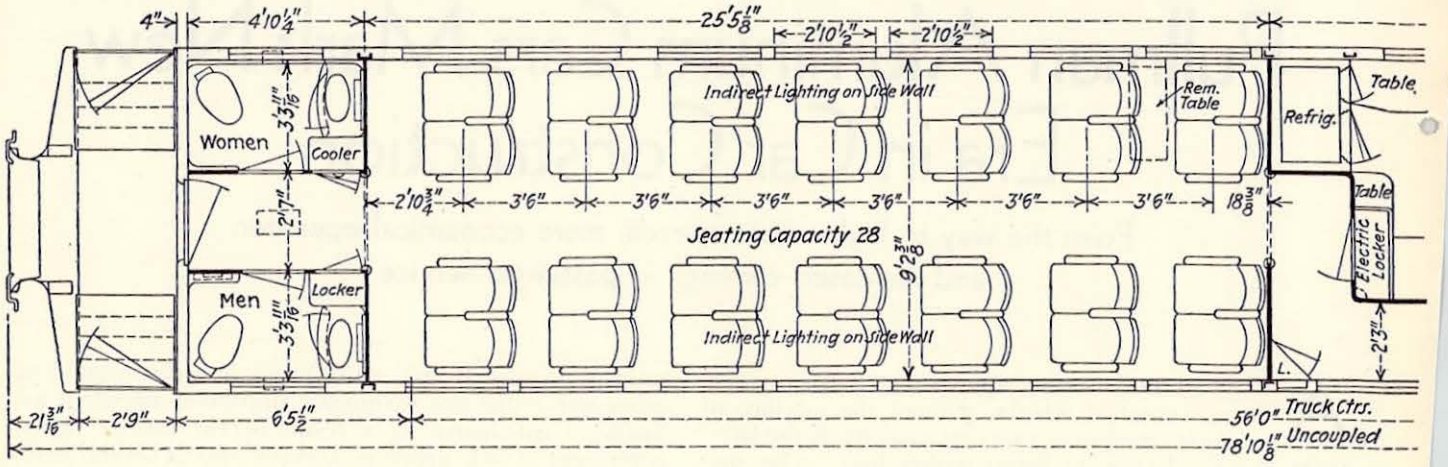
While design problems in this initial car were somewhat accentuated by the use of aluminum, the actual construction of the car was facilitated by the greater adaptability of this material to fabrication, particularly through the use of extruded shapes and sections. Full advantage is taken of standard rolled-aluminum plates and shapes; aluminum castings are used, where necessary; pressed aluminum sections are extensively employed, these sections being formed cold by more of a rolling than a pressing process which conserves both metal thickness and physical characteristics; but principal interest centers about the use of special extruded aluminum shapes, formed by forcing aluminum through metal dies which give it box-section and other shapes impossible to reproduce in steel up to the present time.

The extruded aluminum shapes are, to all practical purposes, perfectly straight, smooth and accurate, and their use reduces substantially the number of individual parts required, eliminates many rivets, saves overlapping joints, and generally permits an interlocking design which contributes to greater strength and rigidity, in spite of being unusually light. By this construction and the placing of various parts of the car frame relatively closer together, where necessary, in order to decrease the length of beam span, the car body structure is said to have even less deflection than previously encountered with steel cars.

The car is of relatively low height so that its body contour will mate in readily with a self-propelled unit or with other cars, at the same time providing ample head room and space within the car body. The rear end is streamlined, the front, or vestibule end, being made with a flush side door and designed for a flush connection with any car placed ahead of it in order to reduce wind resistance. Provision has been made for the subsequent extension of the side girder sheets below the side sills in the form of a skirt, if desired, thus providing an additional streamlining effect. Ventilators also are streamlined and all contours are smooth and true, contributing to the general appearance of the car, the exterior of which is scratch-brushed and waxed to give a silvery satin finish.

Interior Arrangements and Decorative Treatment

The interior of the car is of the "Modern Empire" mode of decoration or finish. As shown in the floor plan, the car is divided into a 25-ft. section, seating 28, in the front end, a 10-ft. buffet, a double card section, seating 8, and a parlor section, seating 14, in the observation end. Two fully equipped and attractively decorated wash-rooms are provided at the front end of the car and two similar wash-rooms between the buffet and the parlor for the use of passengers in this section.



Floor Plan of the Aluminum Observation Coach Designed

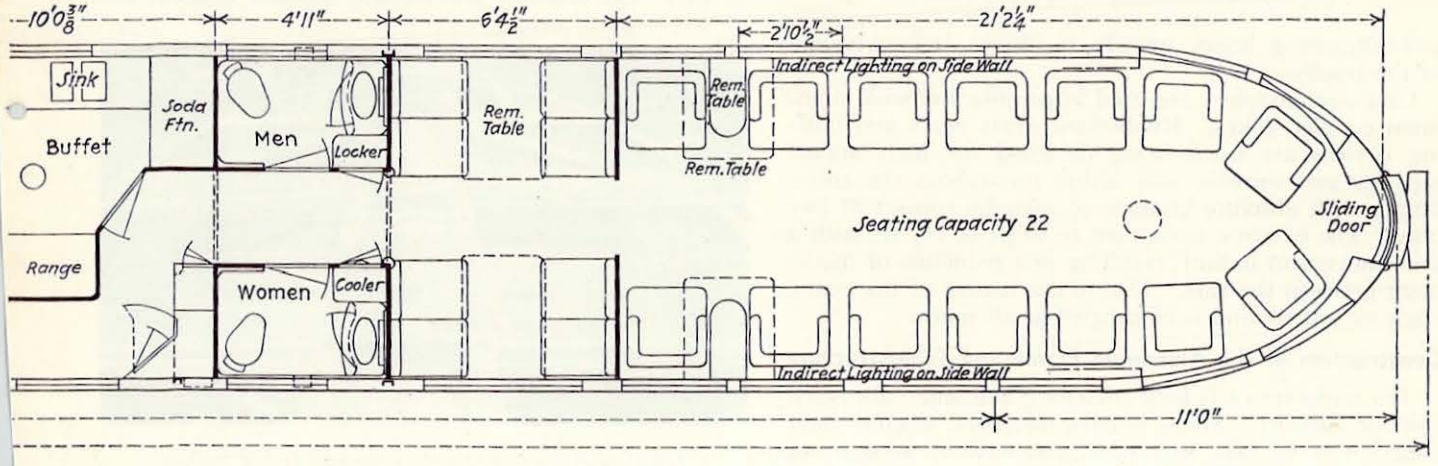
The interior architectural treatment is based on columns from the base board to ducts extending along the car sides at about the height of the eaves. These ducts present the form of a header and are the receptacles for lighting fixtures, which are a part of the indirect lighting system. In the forward or coach section, the wall colors are aluminum and gold-aluminum shades with an extended dentil frieze. The ceiling is of the overlapping panel type, running the entire length of the section. The color scheme in creams and yellows produces uniform light from the side, where the indirect light is located, to the longitudinal center.

The floor covering consists of a black marbleized rubber tiling. The double coach seats, with fixed, semi-reclining backs, are built of rectangular drawn aluminum tubing, which presents a polished framed edge for the reception of the upholstery. The upholstery is free from springs and cushioned by rubberized hair with means for holding the material taut and keeping the

padded portions in their normal position. The attractive jade green frieze of the seat covering harmonizes with the green and gold damask curtains. More than the usual space is provided between the seats and this permits the insertion of removable tables on which meals may be served.

The enlarged buffet in the center of the car is fully equipped and provided with a novel type of oil-burning range, thoroughly insulated, and fired by oil fed to a special firebox in an amount dependent upon the quantity of air supplied by the blower. This is adjusted to produce a temperature of 450 deg. F. in the ovens. Provision is made for the easy removal of the burner, blower and fire bricks and the insertion of grates for coal or briquettes, if desired. The exterior of the range is of polished stainless steel harmonizing with the interior finish of the buffet. Special attention has been given to the ventilation of the buffet and the removal of heat from the range. Buffet refrigeration for both the ice boxes and the soda-water fountain is of the mechanical type.

In the parlor section, the same general architectural design is used as in the coach section, but the column cornices and individual lighting ducts or frieze present



nd Built by the Pullman Car & Manufacturing Corporation

a polished black surface, with polished aluminum moldings and projecting stars to relieve these surfaces. In the main body of the parlor section, the floor is covered with a two-tone rug, in keeping with the color scheme of the section. The portable seats, 14 in number, are upholstered in rust colored frieze, matching the rust and gold damask of the curtains. Between the window tops and the cornice containing the indirect light, mythical or allegorical plaques have been applied at the window sections. The ceiling is of the same type as described for the coach end, although it is continuous from the rectangular or straight-line surface of the side, proceeding in sweeping curves to give a dome effect at the observation end of the car.

The Air-Conditioning System

The air-conditioning system, which is the latest development of the Pullman Car & Manufacturing Corporation, provides for cooling or heating these cars to a comfortable temperature, as weather conditions require. Proper ventilation is secured by forced circulation of filtered air, a sufficient proportion of which is fresh.

In train operation, the compressor is driven directly from the car axles by a series of power transmission devices. In station or yard service, the compressor is driven from an a.c. motor, obtaining its power from the outside source. With this arrangement, the compressor can be driven with a minimum of power losses en route, since the losses incident to generators, motors and batteries are eliminated. In station service, the a.c. power is the cheapest obtainable.

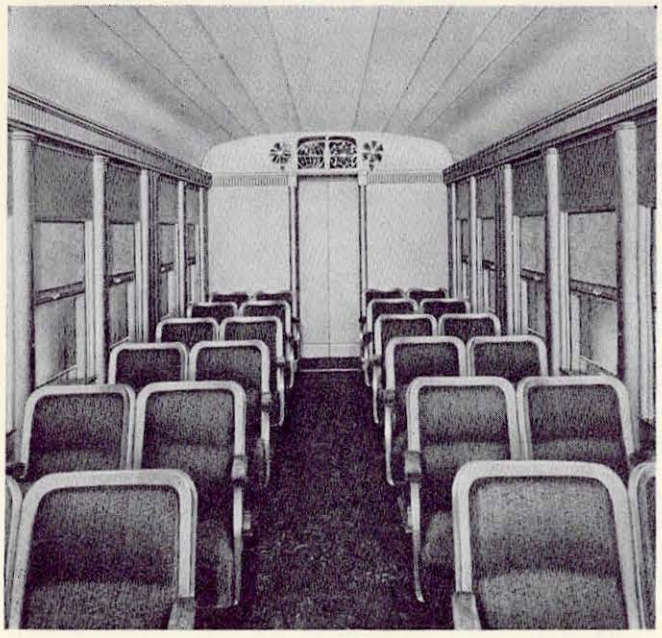
The air-distribution system is of the type commonly known as the bulkhead delivery type. The coach and the lounge sections are each supplied with cooled or heated air by individual units with the air blown into the rooms through grills over the passage opening at one end of each room. The arrangement of both units is similar, each having a fresh air intake with a filter in the side of the deck and a recirculated air grill and filter in the passageway ceiling. Air is drawn in through these intakes by a motor-driven blower fan and passed over the cooling and heating coils, then through the grill into the car body.

The heating system combines floor heat and overhead heat. Since the ventilation system depends upon drawing in fresh outside air and circulating this in the car, it is necessary to heat or temper this air during cold seasons. A heating coil adjacent to the evaporator gives sufficient heat to the air to do most of the heating by this method. Only sufficient of the conventional floor-type heating coils are used to avoid cold floors and to help maintain a uniform temperature at all levels.

The control of the entire system, heating and cooling, whether en route or in stations, is simple and fully automatic. Only two switches and four thermostat switches need be set to control the fan, cooling system and heating system or to select the desired temperature for any season of the year. The entire system comprises a minimum of parts and is unusually light in weight. Aluminum is extensively used for such parts as supporting members, condenser frame and fans.

Trucks Especially Designed for Easy Riding

The four-wheel trucks are of the built-up type, with aluminum side frames. Special provision has been made in the design to assure easy riding and rubber is used at various points to provide an additional cushioning effect. The journal boxes are of aluminum sheathed in steel to reduce wear. Brake rigging parts are made of aluminum, the brake beams being die forgings. Owing to the light weight of the car, it has been possible to use 4¼-in. by 8-in. journals with 33-in. rolled-steel wheels. The truck center plates are a recent development, in which, contrary to the usual practice, the recessed plate is inverted and does not form a receptive cavity for grit and dirt. This construction, in conjunction with



The Seating Arrangement in the Coach Section

self-lubricating liners, greatly facilitates free swiveling of the trucks.

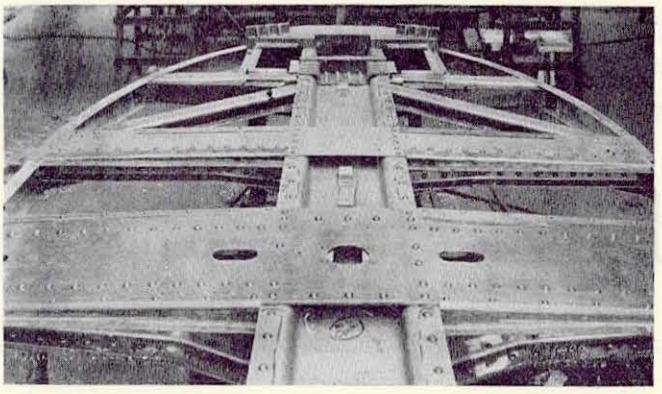
Cast-steel couplers are used in conjunction with aluminum coupler yokes. Rubberized draft gears and buffing devices are used, being designed for high impact capacity and smooth, soft action throughout the entire range, with absolute absence of metallic contact at any time. The extreme movement in draft is 1¼ in. with a 2-in. movement in buff, resulting in a reduction of movement between the cars. Due to the nature of the gears, slack or lost motion is eliminated at all times.

Construction of the Aluminum Frame and Superstructure

The underframe is built of strong aluminum alloys, of suitable ductility. Stress-bearing members, whether their function is to take care of draft, buff or straight or combined loading, are of the continuous type. The center sill is of the straight-line type, with channel-shaped diaphragm spacers extending from vestibule end sill to a point beyond the bolster, of a length sufficient to compensate for shear action and to distribute properly the buffing stresses. Contrary to the usual practice, the cross bearers are continuous and so spaced that the load from the floor and center-sill section is transmitted uniformly to the side-frame members. A unique design of diagonal bracing is used to tie in the side-sill members to the center-sill structure.

A single body bolster is used, of conventional construction, made of top and bottom cover plates, with pressed diaphragms properly framed into the center-sill members. Draft and buffer castings are of heat-treated strong aluminum alloys, and wear portions are provided with steel chafing plates, with the exception of the cavities through which the buffer stems operate. These are provided with removable Pullmanite bushings, which fit closely around these stems, and keep the lost motion at a minimum.

The superstructure represents a car of conventional width, but considerably less height than usual and an arched roof. The side-frame structure has as its essential feature framing members of extruded metal shapes in place of the ordinary pressings. The belt rail is an extruded metal shape running the entire length of the car. The ordinary letter-board member is used, but



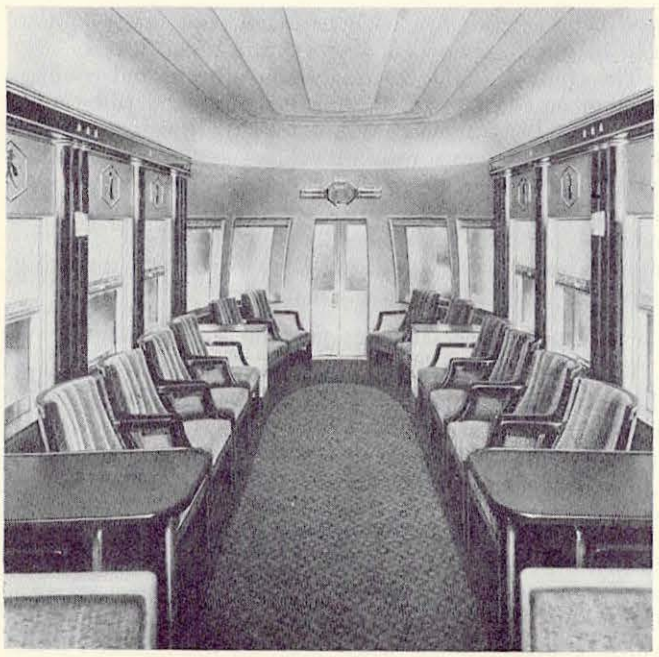
A Portion of the Underframe at the Rear End of the Car

at the bottom of this member is an extruded metal section which acts as a stiffener. The pressed carlines are of channel sections, framed into an eave member resting on top of the post cap and riveted to the two vertical legs of this member. Taking into account the close fits permissible with the extruded metal sections, the whole side frame and roof structure can be likened to a unit structure, due to the continuous length of the sections.

The front end is of the usual type with a relatively flat end, designed primarily for future application of an envelope, which would entirely close in the opening at the sides between this and a forward car, to give a streamline effect. The body end sill is of U-shape, with anti-telescoping plate at its inner upward face, extending inwardly on the underframe.

The rear end has a parabolic contour in both the horizontal and the vertical sections. At the extreme end an opening is provided as an emergency doorway with double sliding doors. The framing is arranged to perform the same functions as provided in the vestibule end. Hairfelt type of insulation is used in the car.

The sash in this car are all of the stationary type, being flush with the outside surface of the car, built up of extruded metal sections, welded into a one-piece frame. The glazing strips are also of extruded metal of wedge type, permitting any desired pressure to be exerted on the rubber glazing member. The glass may be re-



Seating Facilities and Decorative Treatment in the Parlor Section

moved from the inside without removal of the sash. A ventilator is applied in the bottom rail of each sash, streamlined on the outside and of the rotative type.

The aluminum doors, of the non-pinch type, are built up by welding extruded rectangular box-type sections into one-piece frames and spotwelding panelled sheets into this main framing member, making a light and exceedingly strong door of few parts which promises minimum maintenance and long life. Counterbalanced trap doors of similar construction are provided.

Platform Construction to Reduce Noise and Eliminate Dirt

The platform arrangement is based: first, on increased protection and smoothness of action under impact and coupling; second, elimination of noise; and, third, reduction of air drafts prevalent on vestibule platforms with the consequent snow, dirt, etc.

These objectives are accomplished by use of the rubberized draft gear and buffing devices mentioned; also the side and center buffer stem construction. Diaphragm face-plate noises are overcome by counterbalanced springs which positively support these members, holding them in an upward position, rather than permitting them to work up and down. A special type of hinged foot plate and one-fold diaphragm, in contact with the foot plate and used in conjunction with thoroughly weatherstripped trap doors and vestibule side doors, prevents draft and the consequent infiltration of snow, cinders and dirt. All moving parts underneath the underframe portion of the car have been thoroughly cushioned by the use of rubber devices to kill sound and stop vibration.

Freight Car Loading Again Above Last Year

WASHINGTON, D. C.

REVENUE freight car loading in the week ended May 20 again exceeded the total for the corresponding week of last year, as it had done the week before. The total was 531,618 cars, an increase of 523 cars as compared with the preceding week and of 15,990 cars as compared with the corresponding week of 1932. It was a decrease, however, of 223,120 cars as compared with 1931. L. C. L. merchandise and livestock showed reduction as compared with the corresponding week of last year but all other commodity classifications showed increases, and all commodities except grain and grain products, coal, and livestock showed increases as compared with the week before. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

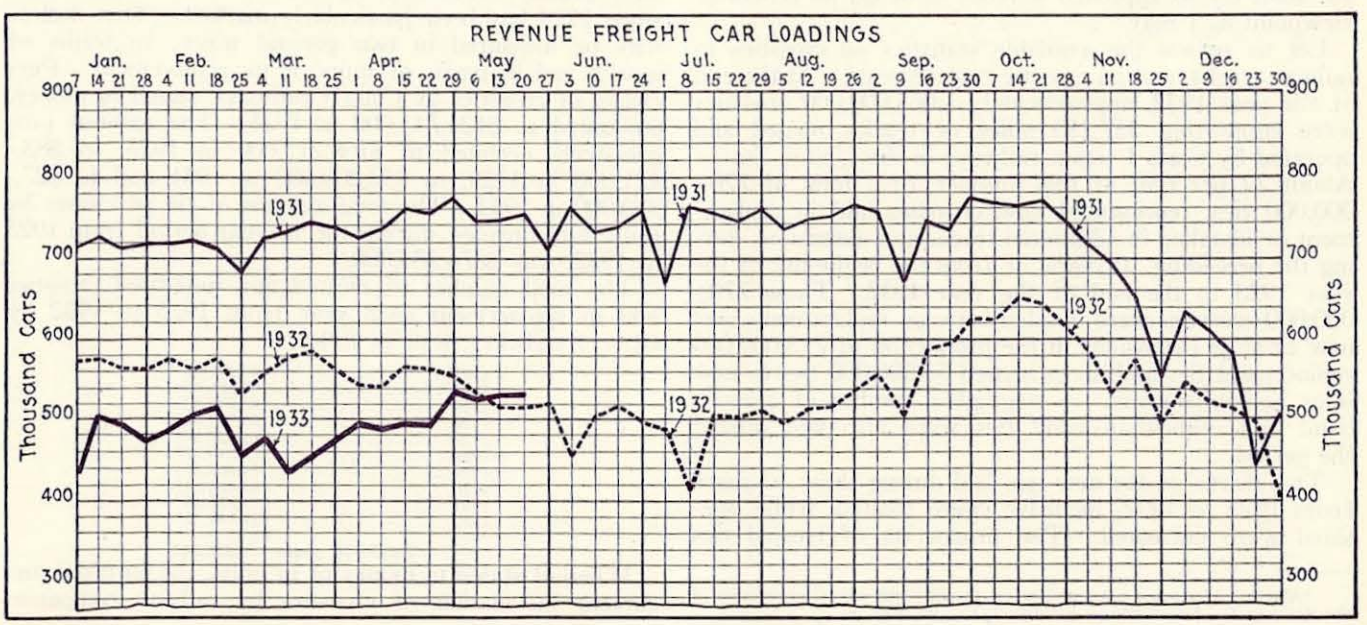
Week Ended Saturday, May 20, 1933

Districts	1933	1932	1931
Eastern	123,877	122,118	172,791
Allegheny	100,030	99,816	151,389
Pocahontas	35,660	32,490	43,989
Southern	81,840	75,826	110,991
Northwestern	65,672	61,203	101,329
Central Western	75,953	81,306	110,518
Southwestern	48,586	42,869	63,731
Total Western Districts	190,211	185,378	275,578
Total All Roads	531,618	515,628	754,738
Commodities			
Grain and Grain Products	35,247	27,767	36,595
Live Stock	15,574	16,650	20,003
Coal	79,646	71,731	116,726
Coke	3,897	3,101	6,625
Forest Products	21,387	18,571	33,634
Ore	8,198	3,001	20,730
Mdse. L. C. L.	165,976	181,158	222,256
Miscellaneous	201,693	193,649	298,169
May 20	531,618	515,628	754,738
May 13	531,095	517,260	747,057
May 6	523,819	533,951	745,740
April 29	535,676	554,197	774,742
April 22	492,970	562,527	758,503
Cumulative total, 20 weeks	9,800,956	11,131,802	14,649,656

Car Loading in Canada

Car loadings in Canada for the week ended May 20 totaled 35,735 cars which was a decrease from the previous week of 718 cars, and the index number dropped from 60.63 to 58.38.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
May 20, 1933	35,735	18,315
May 13, 1933	36,453	18,110
May 6, 1933	37,409	17,930
May 21, 1932	43,678	18,789
Cumulative Totals for Canada:		
May 20, 1933	673,107	347,153
May 21, 1932	830,395	427,115
May 16, 1931	955,909	566,883



Balancing Supply and Demand in Crossties*

A study of the future requirements, based on a statistical analysis of tie renewals since 1923

By Dr. Julius H. Parmelee
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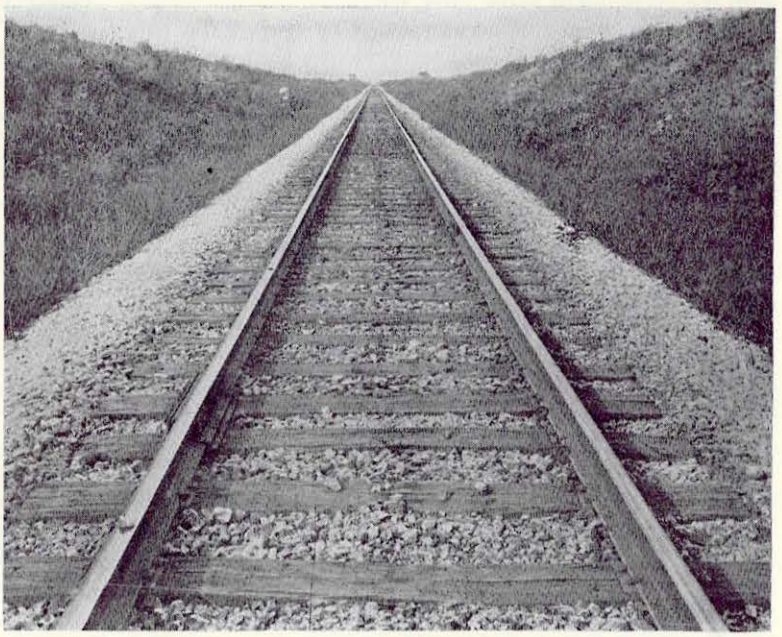
I WILL preface my discussion by three general statements. (1) My approach to an analysis of railway tie economics is predicated on the belief that the steam railway industry is, and will continue to be, the principal agency of transport in the United States. This belief is shared by our national leaders, and I could produce a crowd of witnesses to support it, including the President of the United States, the Interstate Commerce Commission and the National Transportation Committee.

(2) The adjustment of supply to demand, in the case of railway crossties, is a problem in economics, and like all economic problems is a composite of many interrelated factors. The statistics that I shall present are general in nature and cover the whole industry. They do not and can not make allowances for all the differences that exist between regions of the country, and even among railways in the same region, with respect to climate, geography, character of operations, standards of construction and of maintenance, and the like.

(3) In these days, when the financial situation of many industries is subnormal, and the word "balance" must usually be written with red ink, the accounting connotation of the phrase "balancing the budget" may seem unpleasant, or even sinister. For this reason, I shall handle the whole topic not purely as a statistical question, nor even as an accounting problem, but shall try to approach it from as broad an economic viewpoint as I may.



Adequate Tie Renewals are Essential to Modern Transportation Service

Let us review the available statistics on crossties in railway tracks, and on crosstie replacements. At the end of the year 1932, approximately 1,065,000,000 crossties were supporting 357,250 miles of tracks, owned and operated by Class I steam railways in the United States. About 72 per cent of this number, or a total of 770,000,000 ties, represented new crossties laid in replacement or installed in additional tracks and extensions during the preceding 10 years, or from the beginning of the year 1923 to the end of the year 1932. These 770,000,000 crossties were divided between replacements and new lines or extensions in the proportion of 715,000,000 replacement ties and an estimated 55,000,000 ties in new lines and extensions. A negligible number of second-hand and other-than-wood ties were also laid during the period.

Two-thirds of the new ties laid during these 10 years from 1923 to 1932, inclusive, were treated, while one-third were untreated. The proportion of treated ties increased during the 10 years from 49.6 per cent in 1923 to a peak of 79.1 per cent in 1929, then declining slightly to 78.5 per cent in 1930, to 77.4 per cent in 1931, and to 75.2 per cent in 1932.

Annual installations of crossties by railway companies have steadily declined since 1923. The downward curve since 1929 has been particularly marked. This decline may be measured in two general ways: In terms of money and in terms of units of tie replacement. Purchases of crossties by Class I railways, stated in money, amounted to $124,743,000 in 1923. The amount progressively declined to $108,215,000 in 1927, to $83,421,000 in 1929, to $53,200,000 in 1931 and to $27,550,000 in 1932. The total amount of tie purchases by railway companies, during the 10-year period from 1923 to 1932, was $876,383,000.

The total number of treated and untreated crossties laid in replacement each year from 1923 to 1932 by Class I railways, was as follows:

1923	83,987,983
1924	83,069,699
1925	82,713,452
1926	80,742,368
1927	78,323,046
1928	77,349,217
1929	74,662,278
1930	63,338,798
1931	51,486,627
1932	39,149,315
Total—10 years	714,822,783

Whether stated in money or in units, the purchase and current installation of crossties by railway companies

*Abstract of a paper presented before the fifteenth annual convention of the Railway Tie Association at Richmond, Va., on May 11.

showed continuous declines from 1923 to 1932. Comparing 1932 against 1923, tie purchases declined 77.9 per cent, while units of tie replacement declined 53.4 per cent. Comparing 1932 with 1929, the decrease in tie purchases was 67.0 per cent, while the decrease in units of tie replacement was 47.6 per cent.

Two principal causes underlie these trends: First, the increased average length of life of ties in service; second, the sharply curtailed purchasing power of the railway industry from 1929 to 1932.

Analysis of Trends

The tie producing industry, because of the period of seasoning required of its product and because of other factors peculiar to the industry, must gage the market well in advance of demand. In other words, the supply and demand in crossties must be budgeted and balanced. This is true to some extent of every producing industry, but is particularly true of your own. Faced with a declining demand for your product from year to year, your task has been no easy one. Let us examine the statistics dealing with the consumption of crossties by railroads since 1923, and determine by analysis whether any general trends exist that may be significant in gaging the future demand.

Each year since 1923 has shown a reduction in tie replacements under the next preceding year. I have already pointed out that the relatively large declines in 1930, 1931 and 1932 are explained by economic conditions. Even so, it is probable that if conditions in those years had remained as they were in 1929, there would still have been a reduction in the number of crosstie replacements by the railways. This is indicated by the following analysis of the trend from 1923 to 1932. The replacements each year represented the following percentages of the total number of existing ties in track, the trend being steadily downward:

1923	8.3 per cent
1924	8.1 " "
1925	8.0 " "
1926	7.8 " "
1927	7.5 " "
1928	7.3 " "
1929	7.0 " "
1930	5.9 " "
1931	4.8 " "
1932	3.7 " "

During the seven-year period from 1923 to 1929, inclusive, 561,000,000 new crossties were laid in replacement. This represented 55.6 per cent of all ties in service as of the beginning of the year 1923, an average replacement of 7.94 per cent per year. If renewals had continued at the same average rate down to the present time, the number of ties replaced from 1923 to the middle of the year 1934 would have equalled the number of ties in service at the beginning of 1923, that is, 1,009,000,000 ties. However, the trend of replacements from 1923 to 1929 was downward, each year averaging about 0.2 per cent less of the total than the preceding year. If this slightly declining trend had continued after 1929, which is a more likely normal trend than the uniform trend I have just assumed, aggregate renewals beginning with 1923 would not have equalled the total number of ties in track at the beginning of 1923 until a date close to the end of the year 1936.

Unexpired Service Life

On the basis of the 1923 to 1929 trend of replacements, the total unexpired service life of ties in tracks at the beginning of 1923 was 7,210,000,000 tie-years, or 7.15 years per tie. During the seven years ended with 1929, 7,063,000,000 tie-years were consumed, leaving a balance of 147,000,000 tie-years. To this must be added, of course, tie-years represented by new ties placed in service during the period. Computing this at the rate of 20 years per treated tie and 7 years per untreated tie, the aggregate unexpired service life of ties in tracks at the end of 1929 was about 8,845,000,000 tie-years, or 8.77 years per tie. By the end of 1932, 3,027,000,000 tie-years of this amount were consumed, leaving a balance of 5,818,000,000 unexpired tie-years. Replacements represented 2,625,000,000 tie-years, making the aggregate unexpired service life of ties in tracks at end of 1932 about 8,636,000,000 tie-years or 8.36 years per tie.

Summarizing this rather complicated procedure, it appears that at the beginning of 1923, the unexpired service life of all ties in track averaged 7.15 years per tie. By the end of 1929, this average was increased to 8.77 years per tie, while by the end of 1932, because of a slackening in tie renewals, the average dropped to 8.36 years per tie.

In the foregoing computations, I have not included new ties laid in additional tracks, new lines and extensions. Approximately 55,000,000 ties were installed in work of that character during the last 10 years. These ties would tend slightly to increase the average tie life, and I think we can safely estimate the unexpired service life of all crossties now in railway tracks at an average of about 8½ years per tie, or an aggregate of 9,053,000,000 tie-years.

Future Consumption

Dividing this unexpired service life of 9,053,000,000 tie-years by 1,065,000,000, the number of crossties now in railway track, the result is 8½ years per tie. In other words, existing ties will be consumed in that period on the average, and aggregate replacements in the next 8½ years should be equivalent to the total number now in track. This will mean the purchase during the next 8½ years of approximately 450,000,000 crossties of an average service life of 20 years per tie. If the average service life per tie purchased and installed is less than 20 years per tie, a greater number of ties will of course be required. If the same ratio of treated to total ties is maintained as in 1932, about 75 per cent, approximately 540,000,000 crossties will be laid in the same 8½ years. Also, if it is desired to increase the service life of ties in tracks, either by more frequent replacements, or by increasing tie standards, more units will be needed to replace the older ties in service. Considering the fact that the average service life of ties being put in tracks at the present time is somewhat less than 20 years per tie, it seems reasonable to calculate that the carriers may require as many as 60,000,000 crossties annually, to maintain recent standards of tie renewals.

The Financial Problem

We come now to a pressing question. Will the carriers find it financially possible to purchase and install 60,000,000 crossties annually? Under present conditions the answer is clearly in the negative. To replace 60,000,000 ties, therefore, would amount to an aggregate expenditure which under present conditions, is more than twice as much as the roads are now spending for tie renewals. The carriers renewed 39,150,000 crossties in 1932. Present indications are that fewer than 30,000,000 ties will be renewed in 1933, inasmuch as maintenance of way and structures expenses in the first quarter of 1933 were reduced 25 per cent under the corresponding quarter of 1932. This reduction was reflected, among other things, in a considerable decline in tie renewal expenditures.

In these calculations, I have utilized tie costs as of 1932. If the price of ties advances, and if labor costs of installation increase, the situation will change to that

extent and the financial problem will then be to find additional funds for a given number of tie replacements, or as an alternative to reduce the tie program itself.

Must Follow Traffic Trends

Properly to gage in advance the demand for crossties, we must also follow the trend of railway traffic. Upon the traffic which the railways transport depends the amount of their operating revenue; upon the revenue depends, to a large extent, the amount available for operating expenditures; upon the amount available for total expenditures depends the amount available for tie and other purchases. There is a definite and sympathetic correlation between these several items. For example, freight and passenger traffic in 1932 was approximately 50 per cent less than in 1929, so were operating revenues, so were operating expenses and so also were crosstie renewals.

If railway traffic could safely be forecast six months to a year in advance, some idea of the extent of the demand for crossties during that period would be obtained. Railway freight traffic as a whole is not usually subject to violent fluctuations or spasmodic movements, the trend being readily discernible from regularly published statistics. An excellent basis for determining the trend of traffic is supplied by the weekly statistics of cars of revenue freight loaded. These statistics furnish accurate, current information on the volume of railway freight traffic. Making necessary adjustments for seasonal fluctuations and, when necessary, making allowances for the future economic prospects of business as a whole, it is not difficult under normal conditions to gage the purchasing power of the railway industry, for a reasonable period in advance. Just now, all standards of forecast for the future are in disorder, and the problem is a more than usually difficult one.

In discussing traffic, I have had reference to the effect of future rail traffic on the financial ability of the railways to purchase and install ties. There is another definite relationship between traffic and tie budgeting, and that is the effect of the volume of traffic on the life of ties. I recently reviewed a study prepared during the days of federal control by a special maintenance committee. The study was designed to ascertain whether "difference in use" has a measurable effect on maintenance of way expenditures. The committee concluded that "difference in use" is a definite and measurable factor and, further, that the effects could be closely assigned to the several primary classes of operating costs. For total maintenance of way expenses, the committee found that approximately 33 per cent is affected by traffic. With regard to tie expenses, the committee's opinion was that 30 per cent of the expense is affected by traffic. Whatever the extent of that influence may be, this should be considered in outlining and balancing any budget of future tie demands. Under normal conditions, the volume of traffic has probably a lesser effect on the tie program than other factors. When traffic drops to such levels that expenses must be cut to the bone, as at present, then the usual standards are suspended and the absence of traffic becomes in fact the controlling factor.

The Question of Deferred Maintenance

The Interstate Commerce Commission is now conducting at Washington an investigation of rates and charges of carriers by railroad. In preparation for hearings in this case, the commission on April 10 issued a series of inquiries, one of which read as follows:

"What expenditure, if any, will be required to restore the road and equipment to a satisfactory condition, (a) to handle the present volume of traffic, and (b) to handle a volume of traffic equal to the average of the period 1927-1931?"

Formal answers to this inquiry have not yet been submitted by the railways, but the question suggests that a discussion of the extent of deferred maintenance of way and of crossties is, among other things, desired.

Tie expenses of the railways of Class I in 1932 amounted to $46,900,000. The annual average of the five years from 1927 to 1931 was $100,815,000. The expenditure for 1932 was less than one-half as great as in the preceding five-year period and current maintenance programs for 1933 are running below those of 1932.

If freight traffic for 1933 is in the aggregate no greater than in 1932, and I may add parenthentically that the first four months of 1933 showed a decline of 14 per cent in carloadings under 1932, then the question resolves itself into a discussion of present standards of maintenance in their relation to the safe and effective handling of current traffic. If, however, freight traffic shows a continuous rise during the balance of 1933, and even measurably approaches the average level of the past five years, then the problem is intensified. At the same time rail revenues will increase, and perhaps supply a partial solution. As economic conditions return to normal, as traffic returns to the rails, as revenues grow and operating expenses can be correspondingly increased, a renaissance of activity in the program of tie installations seems to be indicated.

Howard L. Ingersoll Honored by Franklin Institute

AMONG the fourteen recipients of honors for outstanding accomplishments in the arts and sciences who received medals at the Medal Day exercises of the Franklin Institute of the State of Pennsylvania, held in the hall of the Institute, Philadelphia, Pa., on May 17, was Howard L. Ingersoll, assistant to the president, New York Central Lines, who was awarded the Edward Longstreth medal in recognition of his work in the "development of the Locomotive Booster to a state in which it gives valuable aid to locomotive performance and railroad service."

For some years it had been recognized that it was desirable under certain operating conditions to be able to supplement the primary power of a steam locomotive for short periods at starting and at low speeds and many efforts were made to accomplish this by devices which acted as traction increasers by bringing additional power wheels into play, or by the application of an independent driving mechanism to the locomotive tender. All of these experiments proved impracticable in operation and it remained for Mr. Ingersoll to visualize and develop the first successful solution of this problem in what is now known as the Locomotive Booster. In approaching the problem of the development of a Booster the inventor observed that

(1) Inasmuch as the tractive force furnished by the Locomotive Booster was to be used only at starting, accelerating and at slow speeds, the mechanism of the Booster should be normally inoperative.

(2) The Locomotive Booster must not interfere or change the normal functioning of the locomotive itself.

(*Continued on page 802*)

Railways Oppose General Freight Rate Reduction

Policy of adjustment of specific rates to fit particular needs preferred by representatives of the carriers

WASHINGTON, D. C.

THE presentation of testimony on behalf of the railroads, in connection with the Interstate Commerce Commission's investigation as to whether or not there should be a general reduction in freight rates as asked by numerous shippers' organizations, was begun before Division 8 of the commission on May 25 and concluded May 31. In an effort to shorten the time of the hearing it was decided to hold a "three-ring circus," and the witnesses appeared simultaneously before Commissioners Aitchison, Lee, and Porter in three separate hearing rooms on Monday.

General Reduction Would Be Disastrous

Declaring that a general reduction in freight rates under present conditions would be disastrous to the railroads and that the best interests of all concerned will be better served by a continuation of adjustments of specific rates to fit the needs of each particular situation, representatives of the carriers, after a general presentation for the roads as a whole, placed before the commission voluminous exhibits and explanations showing for each of the three districts the present situation of the roads and what they are doing to meet the situation, both in the way of rate readjustments and by effecting operating economies. They also pointed out that the sharp declines in commodity prices, which was the principal reason urged by the shippers as to the need for a rate reduction, may be remedied to some extent by the efforts now being made to increase commodity prices, and pointed out that if the reductions in prices have not increased the movement of traffic it was difficult to see how general rate reductions would be any more effective in making people buy more.

D. T. Lawrence, chairman of the Traffic Executive Committee, Eastern territory, also made the point that manufacturers have accumulated large surplus stocks which they may be willing to sell if necessary at less than cost, but that the railroads have no such accumulation. Commissioner Porter asked questions indicating that he thought the surplus capacity of the railroads represented the same thing.

Commissioner Porter questioned most of the executives as to why they did not make general reductions in passenger fares in an effort to promote traffic instead of continually reducing passenger service. He cited figures showing the success attained by the Southern under its policy of experimenting with greatly reduced passenger fares. Commissioner Aitchison also asked those who said they expected the railroads to get their share of the traffic back when general business returns to normal if they expected to do so with the same kind of service, rates, and equipment. The witnesses resented suggestions that they had been "standing pat" and pointed to many experimental efforts to adapt the railroads to changing conditions.

Dr. Julius H. Parmelee, director of the Bureau of Railway Economics, who made the general statistical presentation, submitted an estimate that a general 25 per cent reduction in freight rates would have to produce an increase in traffic of nearly 60 per cent to offset the effect on the net income and leave the railways in the same situation they were in 1932, when they had a net deficit of nearly $153,000,000. To keep freight revenue at the same level, he said, would require the handing of 33⅓ per cent more ton-miles, but a traffic one-third greater than that of 1932 would require a considerable increase in operating expenses, which would depress net railway operating income. Therefore, to offset this tendency, a still further traffic increase would be necessary. To estimate this amount he assumed that the one-third of additional traffic could be handled at one-half of the freight operating ratio which prevailed in 1932, which was 88.75 per cent, and on this basis the total freight traffic would have to increase by 140,400,000,000 ton-miles, or 59.92 per cent.

R. V. Fletcher, general counsel of the Association of Railway Executives, put into the record as exhibits extracts from the recent radio address of President Roosevelt and from his message to Congress on farm relief, indicating his intention to bring about higher commodity prices and to inflate the currency if, as, and when necessary to enable debtors to pay their debts with dollars of a purchasing power approximating that of the dollars they had borrowed.

The first witness for the railways was R. H. Aishton, chairman of the executive committee of the Association of Railway Executives and chairman of the board of the American Railway Association.

Mr. Aishton's Opening Statement

Mr. Aishton pointed out that net income, after fixed charges, in 1928 was $786,824,000. In 1929 it increased 14 per cent. By 1932, however, the net income of 1928 was completely wiped out and was replaced by a net deficit of $152,135,000. In 1929, out of a total of 241,584 miles of Class I railroad, only a total of 10,180 miles of line, or 4.2 per cent of the mileage, reported a net deficit. This deficit mileage had increased in 1932 to 177,932 miles, or 73.7 per cent of the total operated mileage. The companies operating these 177,932 miles of line reported a total net deficit of $250,295,000 in 1932.

For the first three months of 1933, Class I railways reported a net railway operating income of $33,909,000, compared with $65,478,000 for the corresponding period in 1932, or a decline of 48.2 per cent within the last year alone.

Total operating revenues aggregated $6,111,753,000 in 1928. This had declined in 1932 to $3,126,755,000, or 48.8 per cent. During the same period, the carriers reduced their total operating expenses from $4,427,371,000 in 1928 to $2,403,417,000 in 1932, or 45.7 per cent. The actual reduction in operating expenses, in dollars, was $2,023,954,000. The operating ratio in-

creased from 72.44 per cent in 1928 to 76.87 per cent in 1932.

"Considering the tremendous decline of nearly 50 per cent in revenues during this period, the achievement of the railways in maintaining the operating ratio within a few points of the ratio of 1928 was nothing less than remarkable," Mr. Aishton said, outlining some of the ways in which it was done.

The railways in 1933 have continued to reduce their operating expenses, in line with the continued decline in operating revenues. During the first three months of 1933, for example, revenues declined 20.2 per cent under the corresponding three months of 1932, while operating expenses were reduced by 19.3 per cent. The operating ratio for the first three months of 1932 was 79.58 per cent, and was increased slightly to 80.48 per cent for the corresponding three months of 1933.

The commission realizes, of course, that there are certain items in the railroad expense account that are not directly within the control of railroad management. A realization of further economies in operation finds these fixed or slowly yielding items an obstruction to rapid realization of lower operating costs.

Reference in this connection is to such items as labor costs, representing 60 per cent of operating expenses, and for the greater part of which legislative machinery for changes has been set up; taxes, which in 1932 represented 8.8 per cent of operating revenue and was equal to 11.4 per cent of the operating expenses of the railways; cost entailed by legislative action, such as full crew laws, limitation of length of trains and non-productive expenditures, as illustrated by rail-highway grade crossing elimination.

The development of better ways and methods of producing transportation has shown continual progress in the entire history of rail transportation but in no period more than in the last decade and continuing during this depression. This has been brought about through individual research and experience, coordinated through the various divisions of the American Railway Association and made available to all carriers.

Of equal importance to this cooperative work is the research work being conducted by individual railroads through their own laboratories and organizations and covering practically every known field promising results. I have, for instance, a detailed report from 44 of the Class I railroads which indicates that on these 44 railroads there are investigations either about complete or under way on

70 subjects pertaining to locomotives
65 subjects pertaining to freight cars
38 subjects pertaining to passenger cars
9 subjects pertaining to mechanical methods and tools
67 subjects pertaining to engineering
15 subjects pertaining to signals
8 subjects pertaining to telegraph and telephone

We have all this information in detail and the results of these tests are utilized in the general cooperative studies of all these subjects. In view of all these activities and, furthermore, the results attained therefrom, it cannot in fairness and truth be said that the railroads have been remiss either in research and investigation or in their lack of application of the results of this research to their operating conditions.

Elimination of Preventable Wastes

Much has been said regarding the reduction of expenses through elimination of so-called preventable wastes. Much has been done. Already agreements have been effected in the three territories resulting in reduced passenger train mileage and in obviating certain competitive expenditures that may be dispensed with at this time and under these conditions, and in consolidating certain of the collective activities of the western carriers resulting in a reduction in costs. The total number of passenger train-miles in 1928 was 521,711,000. In 1932 this had been reduced to 362,062,000 passenger train miles, a reduction of 30.6 per cent. The totals given for both years exclude motor passenger train-miles, which have shown a gradual upward tendency from 44,427,000 miles in 1928 to 60,078,000 miles in 1932, which is an indication of the extent of substitute service by an economical method which has taken place. Since the beginning of 1933 there have been eliminated, or it is contemplated to eliminate a total of not less than 22,000,000 passenger train-miles in addition to those which had already been eliminated to the end of 1932.

Effect of Rate Reductions on Traffic

It seems to the carriers that the burden of proof is on the shippers to show that any particular reduction in freight rates on commodities as a whole, or on any particular group of commodities, will in fact stimulate a sufficient increase in traffic to more than offset the loss in net revenue from the lower rates. Our experience is that the existing rail rate, whatever it may be, is used as a basis for these unregulated rates, with whatever reductions that may be necessary to select and get the business that will best pay these competing forms of transportation. A general reduction of rates such as is proposed at this time, applying to all commodities or to selected groups of commodities, would simply change the basis for their computation on rates without materially changing the total volume of business handled by each agency of transportation. While it is also true that individual cases of rate reductions initiated by the railroads have in certain situations retained traffic for the rail carriers, and also in some cases regained it for them, it is also true that few, if any, general reductions in freight rates in the past have stimulated such a substantial increase in traffic as to overcome the loss in net revenue resulting from such general reductions.

The Need for Remedial Legislation

It is generally conceded that adequate railroad transportation service is essential. The railroads, however, can only meet this public demand for adequate rail transportation service on a basis of equality of opportunity. The inequitable relationship of today cannot continue if railroad service of tomorrow is to meet the public's requirements.

The Association of Railway Executives presented to the National Transportation Committee a report on the Transportation Problem in the United States. Part II of this report contains recommendations as to policy. Copy of this report is submitted as an exhibit and as representing today the recommendations and considered judgment of the carriers. For three years the railroads have been advocating the changes required for equality of opportunity with all instrumentalities that serve the public in the field of transportation. Never more than today was here a greater need for an early realization of this objective. It is our understanding that with some, at least, of these proposals, the commission is in absolute accord. It is essential that a realization of sound and equitable policies should be had at the earliest possible moment.

The railways may continue to be depended upon to so adjust their charges and service, consistent with good business judgment, as to meet the needs of commerce. It is to the carriers' interest to maintain freight rates which will not only permit but encourage the development of business which may be handled by them.

Dr. Parmelee's Testimony

Dr. Parmelee presented a series of statistical statements, with brief explanations, outlining recent and current trends in traffic, revenues and expenses, rate of return, railway operating performance, and the disappearance of net income after fixed charges.

A summary of the exhibits included the following:

The rate of return on property investment, which averaged 4.81 per cent in 1929, declined continuously during 1930, 1931, and 1932, reaching a low level of 1.24 per cent in 1932.

On the basis of the findings of value made by the commission in Ex Parte 74, plus later net additions and betterments, the rate of return was 5.22 per cent in 1929, and declined to 1.33 per cent in 1932.

Railway companies or systems operating 73.7 per cent of the total Class I mileage of the country failed in 1932 to earn fixed charges by an aggregate of $250,295,000. Carriers of Class I as a whole failed to earn their fixed charges in 1932 by a total of $152,135,000.

During the first quarter of 1933, gross revenues declined 20.2 per cent below the corresponding period of 1932, while net operating income showed a decline of 48.2 per cent. The deficit after fixed charges of Class I carriers during the first quarter of 1933 was $94,901,000, which was 73.8 per cent greater than the deficit of the first quarter of 1932.

Revenue carloading statistics for the first 19 weeks of 1933, to May 13, showed a decline of 12.7 per cent under the corresponding weeks of 1932.

Total operating expenses were reduced by $2,024,000,000, or 45.7 per cent, from 1928 to 1932. Maintenance expenses were reduced $1,035,000,000, or 51.6 per cent; of this total reduction in maintenance, maintenance of way represented $486,853,000 and maintenance of equipment $547,753,000.

More than seven and a quarter billion dollars of new capital were expended on railway properties, from 1923 to 1932, for additions and betterments. These improvements to equipment and plant, which contributed to increased efficiency of operation, were also instrumental in reducing costs of operation.

Average revenue per ton-mile declined 18 per cent from 1921 to 1932. This decline, aggravated by the sharp drop in traffic since 1929, produced a reduction in revenue greater than the amount of savings made by the carriers through increased efficiency and economy of railway operation.

Analysis of the principal elements of railway operating cost demonstrates the considerable extent to which they are resistant to change. They yield very slowly to the effort of management to reduce them.

Calculations make it clear that a reduction of 25 per cent in freight rates and charges would require a more than 60 per cent increase in freight traffic, to offset the losses from the rate reduction.

Dr. Parmelee presented a statement designed to show possible rates of return on the lowest bases that have been suggested from any official source. Even on these bases, the rates of return computed for Class I carriers in 1932 are only 1.39 per cent, 1.51 per cent, and 1.42 per cent, on investment, primary value, and 1920 rate case (Ex Parte 74), valuation, respectively.

Shortage of Earnings Under 5¾ Per Cent

The total shortage of carriers of Class I under 5¾ per cent, for the twelve years 1921 to 1932 combined, was $4,532,000,000 when computed on investment, was $3,136,000,000, when computed on the basis of primary values, and was $4,134,000,000, when computed on the Ex Parte 74 valuation.

A comparison of the railway plant, facilities, and operations in 1931 with the corresponding totals for 1916, a fifteen-year spread, showed that while miles of first main track increased only 4.6 per cent between 1916 and 1931, other main tracks increased 24.9 per cent, and yard track and sidings increased 25.4 per cent. Out of an increase of 44,100 miles of all tracks during this period, 33,482 miles, or about three-fourths, occurred in secondary main and other tracks, indicating that the rail network grew intensively rather than extensively from 1916 to 1931. Dr. Parmelee also said:

Since 1916, Class I steam railways in the United States have added to their property a net investment of more than 8½ billions of dollars, a 51 per cent increase in investment in road and equipment. The transportation machine has been almost completely rehabilitated and has functioned with efficiency, capable of meeting all peak traffic demands. Railway traffic expressed in terms of revenue ton-miles declined 14.7 per cent, while revenue passenger-miles declined 36.7 per cent.

In face of the large increase in investment in railroad facilities, the gross revenues of the carriers in 1931 were only 16.4 per cent greater than in 1916, while operating expenses showed an increase of 36.7 per cent, and taxes increased 93.2 per cent. Fixed charges increased 15.4 per cent, a slightly smaller rate of increase than the increase in funded debt. Railway employee compensation charged to operating expenses increased 43.9 per cent between 1916 and 1931. On the other hand, net railway operating income declined 49.5 per cent, and net income after fixed charges fell off 79.2 per cent.

With an increased plant, and after an input of more than fifty per cent of new investment, the carriers handled less traffic in 1931 than in 1916, their expenses and taxes increased, the return to all investors declined nearly one-half, while the net income available to the stockholders fell close to the vanishing point.

Railway Abandonments

The need for operating economy at every point, competition with other forms of transportation, changes in production and distribution areas and methods, and other economic causes, have materially reduced the traffic of certain rail lines, and have led to many abandonments of service and of mileage.

Beginning with 1920, the Interstate Commerce Commission has had authority to issue certificates of convenience and necessity to the carriers for abandonment of mileage or of operation. According to the annual reports of the commission to Congress, a total of 617 certificates were granted during the period from the effective date of the abandonment provisions of the act, to October 31, 1932. The mileage covered by these 617 certificates was 9,653 miles. The process of abandonment was much more rapid in the last three years of the period, 1930 to 1932, than in the earlier years. During these three years 251 certificates were granted by the commission, covering a total of 4,245 miles of line.

The *Railway Age* publishes each year, in its annual statistical number, a record of miles of railway line abandoned permanently and taken up, and mileage abandoned but not taken up. A compilation of these statistics for the 13 years from 1920 to 1932, inclusive, shows that, according to this particular source of information, 4,794 miles of railway line were abandoned, and taken up and 4,773 miles were abandoned but not taken up, a total of 9,567 miles. The total of abandonments for the three years from 1930 to 1932 was 2,941 miles.

At the close of the year 1932, fourteen railway companies of Class I were in the hands of receivers, with a total operated mileage of 20,629 miles. Ten of these fourteen companies, operating 17,974 miles, went into receivership during the years 1930, 1931, and 1932. Five of the ten companies, with 9,561 miles, were placed in the hands of receivers in the year 1932 alone.

Excluding lessor and other companies, the total number of Class II and III companies in the hands of receivers at the end of 1932 was 35, with a total operated mileage of 2,204 miles. As in the case of Class I companies, the bulk of the companies and the mileage entered receivership during the last three years, this being true of 23 of the 35 companies, and 1,374 of the 2,204 miles.

Summarizing, 49 railway companies of Classes I, II and III were in receivership at the end of 1932, with an aggregate of 22,833 miles. Thirty-three of the 49 companies, with 19,348 miles, or 85 per cent of the total, went into receivers' hands during 1930, 1931, and 1932.

An act approved March 3, 1933, provided for reorganization of railroads engaged in interstate commerce without the necessity of passing through a formal receivership. Under this act, 10 operating railway companies are now in the process of reorganization, with an operated mileage of 11,109 miles. At the present time, therefore, a total of 59 operating railway companies are either in the hands of receivers or under reorganization, with a total of 33,942 miles of line.

Comparing the trend from 1928 to 1932, labor costs per dollar of revenue increased from 43 to 46 cents, taxes increased from 6.4 cents per dollar to 8.8 cents per dollar, while the other items showed varying upward and downward changes. Net railway operating income per dollar of revenue declined nearly one-half, from 19.2 cents per dollar in 1928 to 10.4 cents in 1932.

Railways of Class I reported bills payable on December 31, 1928, as $32,285,393. This increased to $292,173,961 on December 31, 1932, more than nine times as great an amount as in 1928. As of February 28, 1933, loans and bills payable had increased again to $309,500,183.

Daniel Willard Speaks For Eastern Lines

Daniel Willard, president of the Baltimore & Ohio, told the commissioners that "any general rate reduction at this time, with the present greatly reduced volume of business, together with the uncertainty of the future, would tend to bring financial distress if not disaster to the majority of the railroads of the United States.

"I appreciate that this is a very serious statement to make," he continued, "but I wish to add that it reflects my carefully considered judgment, based not only on the statements which the railroad witnesses have submitted but upon some considerable personal experience of my own." Mr. Willard said he did not believe that a general reduction in freight rates at this time would have any appreciable effect on the volume of business now moving and called attention to the fact that since the application was filed in this case by the various shippers' organizations, Congress, responsive in part at least to requests from some of the associations which are the applicants in this case, has passed legislation, which the President has signed, the announced purpose of which is to bring about an increase in commodity prices. If the law has the expected effect, he said, "the alleged maladjustment which the applicants complain of will be largely, if not completely, corrected by the constructive method of raising the commodity prices themselves."

L. A. Downs Testifies For Southern Roads

L. A. Downs, president of the Illinois Central, said railroads in the southern region have been more seriously affected by the conditions that have existed since 1929 than the railroads in other sections of the United States. The decrease in the gross revenues and the net railway operating income of the southern carriers began, more-

over, not in 1929 but in 1927. The net railway operating income of carriers in the southern region in 1927 was approximately $136,500,000.00. The gross revenues and the net railway operating income have declined each year since 1927, the net railway operating income for the year 1932 amounting to only about $26,000,000.00, a return of only 79/100ths of 1 per cent on the total property investment, or 85/100ths of 1 per cent on the findings in Ex Parte 74, plus the net additions and betterments. Mr. Downs also said in part:

It has been said that the railroads are expecting the shipping public to pay a dole to idle capital. A net railway operating income of about $26,000,000, earned by the carriers in the southern region in 1932, is equivalent to a return at the rate of 5¾ per cent on only about $430,000,000.00 The property investment of the carriers in the southern region for 1932 was about $3,280-000,000.00. Thus the southern carriers in 1932 earned a statutory rate of return on only about 13 per cent of the value of their property and on 87 per cent of that value earned nothing. If the southern carriers in 1932 had but earned their fixed charges in full, $87,000,000.00, such an amount would have represented the statutory return on a value of about $1,510,000,000.00, as compared with a book value more than twice that sum.

Not one system in the southern region is now paying dividends. Railroad systems that constitute the backbone of the transportation system in the south, such as the Atlantic Coast Line, the Louisville & Nashville, the Southern, and the Illinois Central, failed in 1932 to earn their fixed charges by $24,500,000.00. In fact, not one system in southern territory in 1932 had a net income after fixed charges, there being a deficit in net income in the case of every system, except the Clinchfield Railroad.

It is the judgment of the carriers that a horizontal reduction in the rates on the so-called "basic commodities" or in all freight rates can have but one result, and that is to reduce the gross revenues and the net railway operating income by substantially the amounts of the reduction in the rates. The reasons in support of this opinion will be given by the traffic officers for the southern railroads who follow me. The southern railroads under these circumstances look with the greatest apprehension upon any proposal that would in their judgment inevitably reduce their net railway operating income. The point I want to leave with the commission is that no steps should be taken that will place in still greater jeopardy such net railway operating income as the carriers in southern territory as a whole now receive, a net income that was insufficient in 1932 by some $48,000,000.00 to pay the fixed charges.

It is not without significance that the net railway operating income of the southern railroads in 1932 was equivalent to a return of 5¾ per cent on a sum of money that was actually less than the amount expended by the southern carriers for additions and betterments to their property during these seven years.

The revenues of the carriers in the southern region cannot be reduced on the assumption that the present maintenance expenses can be indefinitely continued or that further economies can be made that will substantially reduce the present level of expenditures for both maintenance of way and equipment. On the contrary, even if the volume of traffic continues at about its present level the carriers will ultimately be required to increase by substantial amounts their present expenditures for maintenance.

So far as the pooling of passenger service is concerned, I have grave doubts as to whether the passenger services that the southern roads at the present time are affording the public are any less than those which public convenience and necessity reasonably require. The pooling of freight services involves the consideration of different questions from those that present themselves with respect to the pooling or co-ordinating of passenger train service. To an extent freight trains are run as and when required by the traffic. Freight train schedules are built up to take into consideration not only the services required between the originating and terminating points, but between those points and the intermediate points. Any pooling of freight service would require an intensive and careful study in order that injustice may not be done to shippers and receivers of freight, to the communities that the carrier serves, and to the individual carriers themselves. If the co-ordinator bill is passed, this is one of the questions that will doubtless receive consideration at the hands of the roads in the various groups and the co-ordinator.

The railroads have been criticized for their failure to experiment more boldly in these days. They have made experiments, especially in the matter of changes in rates, where their study showed that such changes would maintain or increase their operating revenues, and particularly their net operating income. But the railroads have no cushion to support bold and far-reaching experiments in these days, experiments that might directly affect their solvency. They are making such experiments as they can and at the same time reasonably protect the interests of those groups who might be affected by such experiments.

The plight of the southern lines is due in large measure to the fact that railroad transportation is not on an economic parity with other forms of transportation and that these other forms of transportation are still free agencies and subject to no substantial control.

In my judgment the southern carriers should be able to stand on their feet with even a moderate increase in their traffic, if the preferred treatment which their competitors are now receiving from the standpoint of regulation, taxes, and the use of waterway and roadways that have been constructed by the public, is eliminated, and all competing forms of transportation treated alike. Until this is done no one can tell just how these different agencies of transportation can with the greatest efficiency and economy for the public as a whole fit into a national transportation system.

If the Illinois Central, for example, had the share that it might reasonably expect of the traffic that is now moving on the Mississippi river and that has been moving on this river for the past two or three years in the barges of the companies that have been given certificates by the commission, it would have earned its interest charges in full. The service that the Illinois Central renders to the people in the Mississippi Valley is an essential one. It is not merely an auxiliary one.

The railroads realize that many of these matters are beyond the control of the commission. They can only say that at the present time the only course for them to pursue is to endeavor to prevent any further impairment of their earning capacity, to maintain at least their existing revenues, and to endeavor to increase them whenever they can do so by reductions in their rates to meet these competitive forms of transportation. This, as the commission knows, they are doing.

Ralph Budd Appears For Western Lines

Ralph Budd, president of the Chicago, Burlington & Quincy, devoted much of his statement to answering criticisms that the railroads had recklessly enlarged their capacity prior to the depression.

"Looking backward," he said, "it is difficult to see how any large part of the expenditures for improvement and betterment work could have been avoided. True, there have been many idle cars and locomotives since 1929; but if the business of the country revives to a point that is even midway between the low level of the present and the average for the ten-year period prior to 1930, freight equipment, including modern freight locomotives, will not long be in excess of the requirements. In analyzing the situation as it developed during those post-war years and in the light of previous experience, I cannot help believing that the improvements which were made to the roadway and to the freight cars and locomotives of the Western roads were justified by the conditions which prevailed. With the passenger business there is a difference, but what has happened in that respect surely cannot be charged against the railways."

During the ten years ended 1929 the Western Class I railways added $2,159,240,000 to their property investment. During the same period they increased their funded debt approximately $730,000,000 and increased the stock outstanding approximately $197,000,000. In other words, the increase in debt was only about one-third of the increase in investment. With a plant that was not yet entirely finished and was requiring added investment, it was impractical to reduce the debt in general, and to have paid off some issues in whole or in part, while still requiring more money would simply have meant extra financial operations with attendant expense and without any advantages.

Again looking backward, the only way in which the increases which were made in the debt could have been avoided would have been by railway consolidations or by financing more of the work out of earnings, or both. Consolidation was impracticable as already explained and earnings were not sufficient to justify making any more investment from that source than was done.

Railroad management and public regulatory bodies would assume a very grave responsibility in deciding that a railway plant of substantially less capacity than that of 1929 will suffice in future for the requirements of the shipping public. This is particularly true of the western railways because much of the railway traffic in the West is so highly seasonal. On many of the important western roads there is a high peak of traffic following

the harvest season which requires a daily capacity for a limited period far in excess of the average for the year.

The more carefully one considers this phase of the question the more he becomes convinced that it is not the abandonment of the plans and standards for improving the properties, which were only partially carried out prior to 1930, but the resumption of that program to which we should look forward as the best course of the western railways.

Traffic Policies

The duty of adjusting freight rates and passenger fares to the rapidly changing conditions has fallen upon traffic department officials. They have undertaken to maintain a rate structure which would not prevent the movement of traffic but would, insofar as practicable, yield a return to the extent that new money for needed improvements could be made available. The fact that the revenues have fallen far short of the necessities, is not in my opinion any reflection upon the ability of the traffic officials or the skill with which they have carried on their work, nor does it indicate that any other managerial policy would have been more satisfactory. It is quite possible that passenger revenues have declined unduly because of the too drastic cut in fares in some instances. This theory seems to be borne out by the fact that those districts or regions which have maintained the highest average passenger fares have also suffered the least decline in passenger revenues. It does not seem very likely that during such a business depression as has prevailed since 1929 any great amount of traffic could be created by a reduction in passenger fares or that such increase would be enough to offset the lower fares.

The process of reducing freight rates is going on continuously. This is a matter which will be dealt with at some length by the traffic officials, but it seems appropriate to state here that the subject has been given the earnest consideration of the executives of the western railroads.

It is axiomatic that transportation cannot be furnished for any protracted period of time at less than the entire cost. At the present time, the railways of the country are not securing the entire cost of providing transportation. Substantial increases in net revenue or reductions in expenses must precede, and not follow, any substantial reductions in rates. From the standpoint of the executives, and in the interest of the public, it is obvious that no reduction can be made which does not either add to the net revenue of the railroads or prevent a decrease in such net revenue through loss of traffic. Whether or not a reduction in rates will accomplish such results is, to a great extent, a matter of opinion and conjecture. As the conditions attending the transportation of different commodities, and between different points, vary to a great extent, and particularly with regard to the competition to be encountered, the railroads believe that this is a matter which must be considered with regard to each individual situation. In short, a general reduction of any sort would waste a large proportion of the carriers' revenues in proportion to the results obtained.

It is the position of the executives of the western carriers that the only feasible manner in which to handle this problem is for the traffic officials to consider cases on their individual merits, as they arise. They have been so instructed and are giving the matter constant attention. It is not a subject which can be handled in a wholesale manner either to the advantage of the public or in fairness to the carriers.

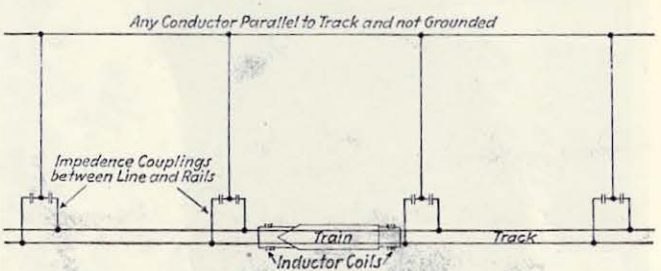
Traffic officials are undertaking to preserve revenues and this means that many adjustments in rates are being made constantly. Even though these efforts are successful in retaining or retrieving traffic to the rails, nevertheless the result is that railway revenues are lagging behind car loadings as the latter recover from the unprecedently low levels of recent months. Since the adjustments just mentioned must be made to meet competition they would have to be continued even if the general level of rates should be lowered and the results would be ruinous to railroad credit. We feel sure that this would be detrimental to the public welfare.

Mr. Budd gave a careful estimate that to restore both the fixed property and the equipment of the Western railways to such a condition that maintenance expense thereafter would be normal would require $90,000,000 for 1932 business and $210,000,000 for the business of the period 1927-1931.

Other witnesses included: L. E. Wettling, statistician for the western roads; F. W. Robinson, vice-president, Union Pacific; A. F. Cleveland, vice-president, Chicago & North Western; C. E. Perkins, vice-president, Missouri Pacific; C. McD. Davis, vice-president, Atlantic Coast Line; E. R. Oliver, vice-president, Southern; C. C. Cameron, vice-president, Illinois Central; H. E. C. Hawkins, general freight agent, Florida East Coast; J. E. Tilford, chairman, Southern Freight Association; J. L. Eysmans, vice-president, traffic, and M. W. Clement, vice-president, operation, Pennsylvania; O. S. Lewis, general freight traffic manager, Baltimore & Ohio; D. T. Lawrence, chairman, Traffic Executive Territory, Eastern Territory.

Telephone Communication System for Freight Trains

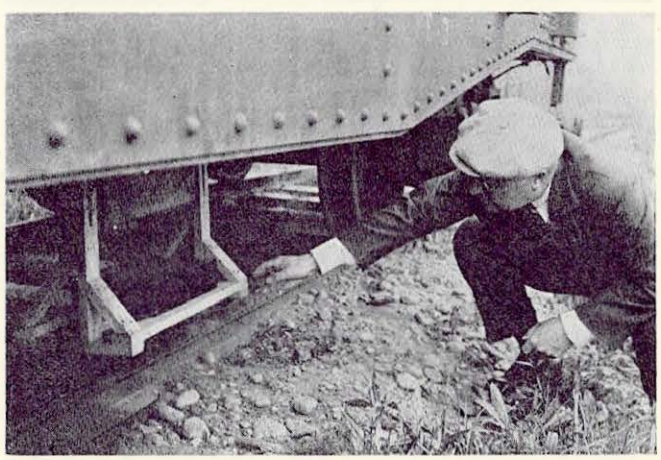
A COMMUNICATION system for use between the head and rear end of long freight trains, or which may also be used between nearby trains, or between trains and wayside points, has been developed by the General Electric Company. The telephone message is delivered to the running rails by induction coils placed near the rails, is carried along the right-of-way on any



Simplified Wiring Diagram Showing the Arrangement of the Circuits Used

convenient wire, and is returned again to the rails where it is picked up as delivered, inductively, by the receiving circuit. The system does not interfere with signal operations and no changes are required in existing signal or train control systems. It does not cause interference with nearby radio receivers and cannot be used to receive radio broadcast.

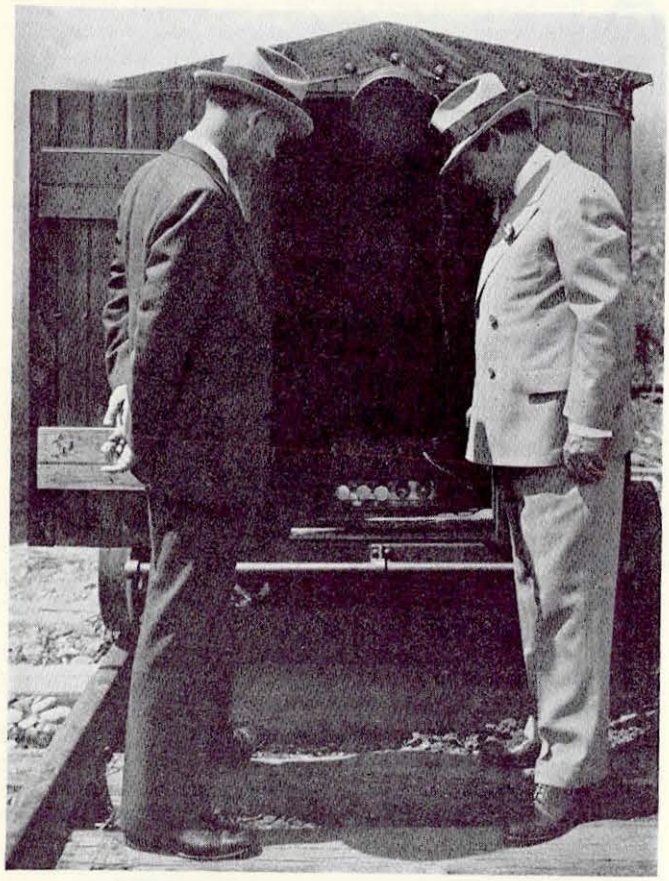
Similar receiving and transmitting sets are mounted on the locomotive and caboose of the train. These are connected in each case to inductor coils which are mounted immediately above the running rails at the



W. H. Arkenburgh, Transportation Engineering Department, General Electric Company, Inspecting One of the Inductor Coils Which Transmit Oscillations to the Rails

minimum allowable clearance. The coils are so connected that oscillations will be induced instantaneously in both rails in the same direction. The oscillations will not travel far in the rails unless the amount of power input is large, but its efficient transmission over relatively long distances is insured by connecting the rail at intervals of about 1000 ft. through static condensers to a wayside wire. When a signal wire is used for this purpose, the breaks at signal locations are bridged by static condensers similar to those used to connect the signal circuit to the rail. At each rail connection, two condensers are connected in series as shown in the diagram so as not to shunt the signal track circuit.

Oscillations set-up in the inductor coils by a transmitter will cause corresponding oscillations in the rails and thus in the system comprising the rails, the condenser couplings and the paralleling conductor. These



E. F. W. Alexanderson, Consulting Engineer, General Electric Company, (right) Demonstrating the Communication Equipment Mounted on a Test Car to Samuel O. Dunn, Editor, Railway Age

The five-tube receiver is shown below and the loud-speaker above

oscillations are propagated over a pre-determined distance and can be picked up from the rails at any point within that distance by any other set of inductor coils. In this manner, two-way communication may be had between the front and rear of a freight train or between two trains if within the proper distance. Communication may also be had between trains on adjacent tracks or the system may be so arranged that there will be no cross talk. If receiving and transmitting apparatus is connected into the paralleling conductor at any wayside point, communication may be had between this point and any train within a pre-determined distance. Telephone, telegraph, signal or power transmission wires may be used as the wayside wire if desired and without interference with their normal function.

The sending and receiving sets consist of a three-tube transmitter and a five-tube receiver, the latter being designed to provide loud-speaker reception sufficient to be audible throughout the cab or caboose. The frequency used is of the order of 65 kilocycles. The receiver is equipped with automatic volume control to compensate for variation in the distance between the coil and the rail.

Tests indicate a receiving range of five miles or more over well-bonded tracks. The power requirements at each end of the train are 160 watts, with an output of five watts to the induction coils. Tests show that signals can be sent and received satisfactorily at even less than a watt. It is planned to take the required power on the locomotive from the headlight or train-control generator and on the caboose from a battery operating in conjunction with an axle-driven generator. A small motor-generator set is used to convert the power from the battery or headlight set to the proper values for filament and plate current. Under normal conditions of operation, the sets run continuously during the time the train is in service and are constantly ready for service. Simplex operation is used to simplify the equipment required.

Howard L. Ingersoll Honored by Franklin Institute

(*Continued from page 796*)

(3) The Locomotive Booster must be so controlled as to impose no burdensome duties on the engineman.

(4) The control of the Locomotive Booster must be provided with the following safeguards:

(a) The power of the Booster must be interlocked with the control mechanism of the locomotive.

(b) The Booster must automatically disengage or become inoperative when the locomotive reaches a stage where the power of the Booster is no longer required.

(c) The Booster must be so arranged that the engineman may, as his judgment indicates, connect or disconnect the Booster as the occasion demands within its working range.

The original Locomotive Booster as invented by Mr. Ingersoll was a horizontal two-cylinder, double-acting engine, non-reversing, mounted on the trailer truck and geared to the trailer axle through an idler gear which could be put into or out of operative engagement. Steam coming directly from the boiler was admitted at three-quarters stroke with no variation of the cut-off in the Booster cylinders, although the steam admission was under the control of the engineman. The Booster had a flexible mounting in the form of a three-point suspension, two bearings being on the trailer axle and one in a spherical seat in the frame of the trailer truck, permitting the Booster to swing as the trailer swings. The first Booster designed by and built under the direction of Mr. Ingersoll was put into service on a New York Central Atlantic type locomotive No. 990 early in 1919. Shortly thereafter, other applications having been made to demonstrate the practicability of the device, the further development and promotion of the Booster was carried on by the Franklin Railway Supply Company, New York.

The Locomotive Booster as it is used today on 88 railroads in the United States and on the railroads of several foreign countries remains in principle as it was originally designed by Mr. Ingersoll.

Depletion of Railway Supplies Grows

Inventories for maintenance not as plentiful as book values indicate—Much material for special work

INTERESTING facts bearing on the adequacy of current inventories of materials for railway maintenance and operation are found in records of materials and supplies on hand, which distinguish between materials carried for maintenance and those earmarked for special work. These facts are apart from the fact that total inventories now include increased amounts of obsolete materials and scrap, that they also include quantities of used materials at prices equal to the cost of new materials and that book values are not written down in all cases to current market levels.

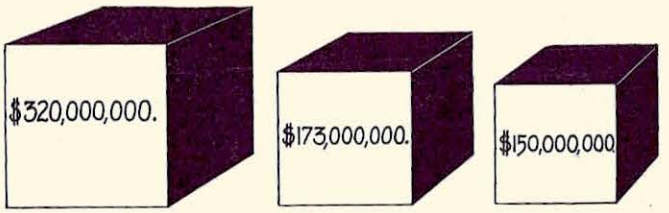
The facts regarding special stocks go beyond these questions by distinguishing between all serviceable materials and the serviceable materials that are available for routine work, or, putting it another way, by distinguishing between the liquid and frozen parts of the serviceable portion of railway stores, the frozen part consisting of materials which were purchased for curtailed construction jobs or other work requiring special authority and which, with the exception of new rail, are, for the most part, either not adapted to or available for routine repair of the railway plant. Special switch work, underframes for carbuilding programs, structural steel for new bridges and tenders for modernizing power are examples of such material.

Much Track Material Earmarked

The volume of this stock, while not definitely established, is indicated by reports from three Class I roads for October, 1932. On one road, with an inventory of materials for maintenance of way and structures amounting to approximately $312,000, the percentage of fixed stock was negligible; on a second road with a $4,102,000 stock of this class of material, including ties and rail, the fixed stock amounted to $639,000, or about 15 per cent; and on a third road with a maintenance of way stock valued at $1,272,000, the fixed stock amounted to about $265,000, or about 21 per cent. Omitting ties and rails, the fixed stock was 33.8 per cent of the maintenance of way balance on one road and 38.2 per cent on the other road reporting such stock. In the *Railway Age* of April 15, the inventory of maintenance of way stock, including ties and rails, for all the railroads was estimated at approximately $168,470,000, while the inventory, exclusive of ties and rails, was estimated at approximately $42,700,000. Disregarding price changes and obsolescence, it is evident that, on the basis of these proportions of fixed stock, the maintenance of way inventory would have been somewhere in the neighborhood of $148,000,000, instead of $168,500,000, and the balance, exclusive of ties and rails, would have been closer to $32,000,000 than $42,700,000, if fixed stocks were deducted.

Per Cent of Fixed Stock to Total

	Road A	Road B	Road C
Maintenance of Way Materials			
Total	$312,134	$4,102,434	$1,272,367
Fixed	None	639,180	265,285
Per cent fixed	None	15.4	21.0
M. of W. Materials, Excluding Ties and Rails			
Total	$68,735	$1,473,532	$692,396
Fixed	None	479,890	265,285
Per cent fixed	None	33.8	38.2
Maintenance of Equipment Materials			
Total	$305,092	$2,526,920	$673,117
Fixed	78,057	301,940	196,327
Per cent fixed	25.6	11.8	29.0
Transportation Materials			
Total	$12,985	$242,786	$35,897
Fixed	352	None	5,693
Per cent fixed	2.7	None	14.0
Miscellaneous Materials			
Total	$404,446	$602,559	$184,090
Fixed	81,747	1,055	14,213
Per cent fixed	20.0	None	7.2
All Materials, Excluding Fuel			
Total	$665,788	$7,474,700	$2,188,174
Fixed	81,747	942,172	481,519
Per cent fixed	12.2	12.3	22.8
All Materials, Excluding Fuel, Rails, Ties and Scrap			
Total	$404,446	$4,481,968	$1,519,058
Fixed	81,747	942,175	481,519
Per cent fixed	20.0	21.0	31.0



Total Railway Inventories, January 1, (Book Value) | Remainder After Deducting Fuel, Ties, Rails and Scrap | Remainder After Also Deducting Temporarily Frozen Stock

Equipment Stocks Also Frozen

The book value of maintenance of equipment materials on one of these roads was about $305,000, of which approximately $78,000, or about 26 per cent, represented materials held for special work. The second road, with a book balance of $2,527,000 for maintenance of equipment materials, reported fixed stock in the amount of about $302,000, or 11.8 per cent, while the third road, with a maintenance of equipment stock balance of $673,000, had a fixed stock of about $196,000, or 29 per cent. The maintenance of equipment stock balance for all Class I roads on January 1, 1933, was estimated to be approximately $95,880,000. Based on the above percentages of fixed stock to total stock, the amount of material available for routine maintenance of locomotives and cars would seem to have been more nearly expressed by a book value of about $80,000,000 or less instead of $95,880,000.

The total stock balance for all materials, including scrap but exclusive of fuel, was about $665,000 in October, 1932, on one road, and the fixed stock was about $82,000, or 12 per cent. On a second road, the total balance was $7,475,000, and the fixed stock $942,000, or about 12 per cent; while on a third road the total balance was $2,188,000, of which the fixed stock amounted to $481,000, or about 23 per cent. The fixed stock on all three roads averaged about 15 per cent. The total inventory of all roads on January 1, exclusive of fuel, has been estimated at approximately $300,000,000. Based on the above percentages, it would appear that a figure somewhere in the neighborhood of $260,-

000,000 more nearly represented what was in the inventory after deducting the fixed stock.

Repair Stocks Below $150,000,000

To determine the materials considered in routine maintenance of equipment and facilities, it is necessary to deduct ties, rails and scrap, as well as fuel. On this basis, the stock balance in October was $404,000 and the fixed stock about $81,000, or 20 per cent, on one road. On the other road the stock balance was $4,482,000 and the fixed stock $942,000, or about 21 per cent; while the balance on the third road was $1,559,000, and the fixed stock about $481,000, or 31 per cent, giving an average fixed stock on the three roads of about 25 per cent. The book value of materials and supplies, exclusive of scrap, rails, ties and fuel, for all the roads on January 1 was about $173,000,000. If the fixed stock amounted to only 15 per cent of the total instead of the 25 per cent indicated by the foregoing figures, it follows that $150,000,000 would more nearly indicate the volume of serviceable material available for routine work than $173,000,000. By deducting 25 per cent for fixed stock, this inventory would be approximately $130,000,000.

The stocks of frogs, switches and crossings on one of the three roads amounted to approximately $123,000, of which $33,000, or about 27 per cent, was fixed stock. On the other road reporting fixed stock, the inventory of frog and switch material amounted to $141,262 and the fixed stock $100,651, or 71 per cent. Based on these figures, the inventory of frogs, switches and crossings on all the roads in January, estimated at $8,500,000, contained less than $5,000,000 worth of material available for general repair. Similar percentages indicate that the inventory of track fastenings on January 1, estimated at $6,150,000, also contained less than $5,000,000 of material available for general use.

The proportionate amount of other maintenance of way materials available for general use may be indicated as follows: One road's balance of interlocking, signal, telegraph and telephone material amounted to $209,600 in October, 1932, of which $15,308 was fixed stock. On a second road, the signal and telephone material balance was $53,389, of which the fixed stock amounted to $21,337, or about 40 per cent. One road reported $410,142 of bridges, turntables and structural steel on hand, of which $378,907, or 91 per cent, represented fixed stock, while the repair parts for fuel and water stations, scales, etc., totalled $40,815 on one road, of which $6,111, or 15 per cent, was fixed stock.

Idle Shop Materials

One road's stock of bolts, nuts, washers, rivets, etc., for maintenance of equipment amounted to $17,272, of which $6,308, or 36 per cent, was considered fixed stock. On the second road, the total stock of bolts, etc., was $37,842, and the fixed stock $3,609, or 10 per cent; while on the third road, the total balance of this material amounted to $23,064, of which $13,067, or approximately 36 per cent, was reported as fixed stock. It is significant of the locomotive and car-spring situation that one road, with a stock balance of this material amounting to $10,048, reported $1,300, or 13 per cent, as fixed; while a second road reported a stock of $23,956, of which $19,807, or about 84 per cent, was reported as fixed. One of these roads, with a stock of boiler flues, superheat material and similar materials for boilers, amounting to $170,761, reported $36,803 of this stock, or 25 per cent, as fixed.

It has been estimated that the roads had a book balance of locomotive and car forgings and pressed and fabricated steel on January 1, 1933, amounting to $10,400,000. In the light of this figure, it is noted that one of the roads in question, with a stock of this material amounting to $20,145, reported $7,917, or about 40 per cent, as fixed stock; and a second road, with a stock of this material amounting to $325,733, reported $62,482, or about 32 per cent, as fixed; and that a third road, with a stock of this material amounting to $36,692, reported $22,609 of this stock, or about 60 per cent, as fixed; from which it follows that a book value somewhere in the neighborhood of $7,000,000 or less more nearly represented the amount of locomotive and car castings available for general maintenance on January 1.

Another large class of materials for the maintenance of equipment consists of the locomotive and car castings stock, which, it has been estimated, amounted to approximately $19,300,000 on January 1. On one of the roads in question, this stock amounted to $76,285 in October, 1932, of which $21,537, or approximately 28 per cent, was regarded as fixed. On a second road, this stock amounted to $606,228, of which $52,121, or 8.5 per cent, was considered fixed; while on the third road, this stock amounted to $125,676, of which $37,226, or about 29 per cent, was fixed. If it were assumed that only 15 per cent of this material on all the roads was fixed, it is evident that the amount of this material available for general use on all the roads would be more nearly represented by a figure of approximately $14,000,000 than of $19,000,000.

The largest stock of maintenance of equipment materials is made up of wheels, tires and axles, it having been estimated that this stock amounted to approximately $18,300,000 on January 1, 1933, for all the roads. On three roads, this inventory amounted to $59,719, with $17,191, or approximately 29 per cent, representing fixed stocks; while on one of the other roads, the fixed stock amounted to $42,844, or about 54 per cent of a total stock of wheels, tires and axles of $78,222. It would thus appear that the stock of this material available for routine work on all the roads would be more nearly expressed by a figure of approximately $12,000,000 than $18,000,000.

Even an appreciable part of the lumber stocks carried by the railroads are evidently held for special work and are thus not available for routine work. Thus, one road with a stock of car and locomotive lumber amounting to $11,727 in October, 1932, reported $3,783, or about 32 per cent of this stock, as fixed; and another road with a total inventory of car and locomotive lumber amounting to $79,868 considered $27,378, or about 35 per cent, fixed.

The reports also show that 10 per cent of one road's electrical stock and 28 per cent of another road's was held for special work, that the fixed stock of iron and steel pipe and fittings was 20 per cent on two of three roads, and that the fixed stock of hardware amounted to 17 per cent on one road and 12 per cent on another road, while the fixed stock of glass, rugs, paints, etc., amounted to 28 per cent of the total on one road and 25 per cent on another road. Similar observations can be made as to such items as air-brake materials, power-plant equipment, machinery, etc.

The inventory of all materials on January 1 showed a reduction in the investment of materials and supplies of approximately $59,000,000 from the previous year and approximately $450,000,000 from the year 1920, when inventories were at their peak. It is evident from the foregoing facts that even the large reductions which have occurred in railway inventories do not show the full extent to which the inventories of materials for routine repair work have been reduced.

Railroad Bill Passed by Senate

Effectiveness of co-ordinator greatly restricted by amendments adopted in Senate

WASHINGTON, D. C.

WITHOUT a record vote, which would probably have disclosed the absence of a quorum, the Senate on May 27 passed the administration emergency railroad bill, conferring broad but vague powers temporarily on a Federal Co-ordinator of Transportation and also carrying, as permanent legislation, amendments to the Interstate Commerce Act repealing the recapture clause and providing for regulation of acquisitions of control of railroads by holding companies or individuals. The bill was passed with the amendments adopted the week before by the committee on interstate commerce to meet the wishes of the railroad labor organizations, including the provision that the number and compensation of employees shall not be reduced below the status in May as a result of the operation of the new law, and with half a dozen new amendments offered during the debate, most of which place additional restrictions on the power of the co-ordinator.

House May Reject Some Senate Amendments

As passed by the Senate the bill was sent to the House and referred to the committee on interstate and foreign commerce, which had not yet acted on the original bill after two weeks of hearings. It is considered possible that the House may fail to approve some of the Senate amendments, which would throw the bill into conference, but anything in the nature of a deadlock would tend to prevent passage of the bill before Congress adjourns about June 10.

The bill was passed without a vote on the six-hour day bill proposed by the Railway Labor Executives' Association, which was introduced recently by Senator Black, of Alabama, and which he offered as an amendment from the floor, with some changes, after it had been voted down in committee. It was withdrawn when Senator Dill, chairman of the committee on interstate commerce, announced that he had been authorized by the President to say "that he considered this six-hour day amendment unworkable as it would be applied under this emergency legislation" and that it "would be ruinous to the purposes of the bill." This opinion had been explained to the labor organization representatives, Senator Dill said, and they had expressed themselves as wishing to co-operate with the President and willing to have it withdrawn.

Labor Trades Six-Hour Day Amendment for Limitation on Payroll Reductions

Previously Senator Dill had stated "on the authority of the chairman of the legislative committee of the railroad labor organizations" who had come to see him the day before, after repeated conferences, that with the amendments added to the bill by the Senate committee "the railroad employees are satisfied with the bill and have no objection to it, but are really in favor of its passage." In other words they traded the six-hour day bill for the limitation on future payroll reductions.

The Black amendment would have made six hours the measure or standard of a day's work for the purpose of reckoning wages and would have required the maintenance of existing rates for the reduced working period pending the making of new contracts. Senator Black said his amendment had the unanimous endorsement of all the railroad brotherhoods, including the engineers, who had been reported previously as being opposed to it.

A New Rule of Rate-Making

Senate amendments to the bill included some fancy trimmings added to the new "flexible" rate-making rule which the Interstate Commerce Commission had proposed as a substitute for the fair-return-on-value rule of Section 15a, offered by Senator Norris, of Nebraska. The rule of the original bill merely stated factors to be taken into consideration by the commission in prescribing just and reasonable rates. The Norris amendment adds a proviso that "no such rate shall be greater than will be sufficient to produce a fair and reasonable return upon the prudent investment in the property less depreciation or upon an investment necessary to reproduce the property." Senator Norris explained that his idea was that the commission should use whichever of these bases would be the lower. "The adjustment of rates upon either of these theories, standing alone," he said, "might get us into difficulty and bring about an unfair rate. It would never do any injury, it seems, to anyone to couple the two together."

No Rate Increase Except After Hearing

Another amendment, offered by Senator Trammell, of Florida, is intended to prevent rate increases except upon specific authorization of the Interstate Commerce Commission after hearing, by providing that a carrier proposing an increase in rates shall apply to the commission for an authorization and that the commission shall not pass upon such application until after 60 days and a hearing, of which it must give at least 30 days' notice and at which the carrier would be required to prove the reasonableness of the increase. This was suggested by an experience of some constituents of the senators who had been taken somewhat by surprise by an increase in rates made effective in the usual way on 30 days' notice. Senator Trammell also tried unsuccessfully to prevent the repeal of the recapture clause.

Another amendment, offered by Senator Long, provides that "no routes now existing shall be eliminated except with the consent of all participating lines or upon order of the co-ordinator." One offered by Senator Connally, of Texas, provides that "nothing in this act shall be construed to relieve any railroad company from any contractual obligation which it may have assumed with regard to the location or maintenance of offices, shops or other facilities at any point, and all rights under such contract shall remain unimpaired."

An amendment offered by Senator Duffy, of Wisconsin, provides that "no order of the co-ordinator shall operate to relieve any carrier or subsidiary from the effect of any state law or of any order of a state commission made after this title ceases to have effect." Another amendment offered by Senator Duffy provides that the state commissions or governors notified of a proposed action by the co-ordinator shall have "reasonable opportunity to present views and information bearing upon such contemplated order."

Senator Long also obtained passage of an amendment that "the laws of the several states and orders of the commissions of the several states already in existence and hereafter enacted shall remain in effect unless the orders affecting them relate to interstate commerce." Senator Dill, in accepting the amendment, said "they would have that right anyway."

The Senate committee amendments were adopted on May 26 with practically no discussion, when very few senators were present, and the Black amendment was reserved for the following day. There was very little debate, most of the time devoted to the bill being taken up with an explanatory statement by Chairman Dill, a speech by Senator Wheeler, who opposed the bill as "deflationary" and intended to "put the stamp of approval upon railroad monopolies" and a long speech by Senator Shipstead on railroad capitalization.

Senator Wheeler's speech was devoted mainly to showing that the insurance companies could get along very well even if their railroad investments should turn out badly, because, he said, the income of 342 life insurance companies from railroad bonds was only 3 per cent of their total income. Senator Wheeler told the Senate that "under this bill, if a co-ordinator is appointed, we will have unification of the Great Northern and Northern Pacific Railroad Cos.," and Senator Borah opposed the bill on the ground that it provided for railroad consolidations and insisted that the chief economies proposed would be at the expense of labor. Senator Dill pointed out that if the bill is not passed there will be nothing to prevent the railroads from "going ahead and throwing out of employment all the men they want to discharge."

Senator Borah said he would vote against the bill because he was "not quite ready to authorize either the Interstate Commerce Commission or the co-ordinator, or both of them, to authorize any combination which they may see fit to have in this country so far as railroads are concerned," although Senator Dill explained that this would be permissible only to the extent that it is permissible now under the law.

Senator Dill in his opening statement described the serious situation of the carriers, for which he said "the railroad managers are not entirely to blame," and said it was believed that "through this legislation some relief may be secured, and particularly that much information and some valuable recommendations may result that will be quite helpful to the Congress in regular session next January for the passage of a more comprehensive railroad bill." He pointed out that as amended by the committee the bill would prevent reductions in the number of employees but said that if the recent increase in business continues the orders of the co-ordinator may absorb the additional employees that would be needed. He also thought that many savings could be accomplished without reducing the number of employees and said that one man had stated that $100,000,000 a year could be saved through the standardization of equipment, which could be enforced by the co-ordinator." He did not say whether he expected this standardization to be completed within the year. He also believed the Interstate Commerce Commission could compel reductions in railroad capitalization as a condition of its approval of loans from the Reconstruction Finance Corporation and expressed the hope that the co-ordinator would be able to reduce the number of "needless executives" and the "fabulously high salaries."

Senator Dill defended strongly the proposed repeal of the recapture clause, of which there was some criticism, saying that if it were to be retained it would be necessary to fight it through the courts for the next ten years and that it would be better to "forget the whole thing as a colossal mistake." He said "we will not be giving them any money because there is not any money to give them." Senator McCarran, of Nevada, thought that $342,000,000 had been impounded somewhere, and wanted it returned to the shippers.

Senator Fess, the only one of the "conservative" senators who discussed the bill, said he did not like the general idea of giving so much power to one person, but that those powers are somewhat limited "and especially limited in time." "The one feature about title 1 which I think is very unfortunate, and yet I do not know how to avoid it," he said "is that which authorizes the co-ordinator to make economies, and I fear we proceed to write into the bill handicaps which would make it difficult for him to do the things we authorize him to do. That is a misfortune which grows out of legislation where groups of influences operate with emphasis in writing the law. I am not sure whether there is anything especially to be gotten out of title 1 at all or not. I am going to vote for it, because it is in the direction of economy and lays down a plan for study, so that in the future certain changes in law may be recommended or, if it be the wisdom of those studying it, not only to change the law but probably to repeal some provisions of the law now operative.

"Title 2 is important. I think we are all convinced the recapture clause ought to be repealed. I do not know anybody who is not in favor of that. Shippers favor it, laborers favor it, the managers favor it. That part of it is quite essential. I cannot see a scintilla of argument against covering holding companies which do transportation with the authority of the Interstate Commerce Commission. While there has been some lip objection, I cannot see any consistency in objecting to that provision. I think title 2 is quite important. Title 1 would be important if the purposes could be carried out. I shall vote for the bill, in the hope that it may be of benefit."

President Roosevelt's plan of having bills which he desires passed drafted by his own advisers and submitted to Congress does not appear to have turned out particularly successful in this instance. A committee appointed by Secretary Roper of the Department of Commerce had worked for several weeks on the railroad bill, consulting with representatives of the railroads, labor organizations, security holders, shippers and state commissions and conferring frequently with the President, but all the work that was done in advance has not prevented the Senate from rewriting most of the emergency title of the bill.

The bill still states three main purposes. The first is to promote economies, particularly the avoidance of unnecessary competitive duplication in service or facilities. The second is to promote financial reorganization of the carriers, but the only thing left in the bill on this point is a direction to the Interstate Commerce Commission to withhold approval of loans from the Reconstruction Finance Corporation to carriers which it thinks ought to be reorganized. The third is to provide for a study by the co-ordinator of means of improving conditions surrounding transportation in all its forms and the preparation of plans therefor, while he is also engaged in the emergency work of trying to effect economies.

Representative Byrns, House Democratic leader, said it was likely the House would make a considerable number of changes in the bill before passing it.

The House committee on interstate and foreign commerce met on Wednesday to consider the bill and was to meet again on Thursday. Chairman Rayburn, after a White House conference on Wednesday, said the labor amendment would be included and the bill passed probably this week.

Communications . . .

Parcel Post Unconstitutional

PHILADELPHIA, PA.

TO THE EDITOR:

The article entitled "Uncle Sam's Express Business," published in your December 3, 1932, issue, throws considerable light upon a subject that has not received the attention it merits.

The carriage of merchandise for commercial purposes is not properly a function of the federal government, yet it has been a very prominent feature of post office activities under the guise of fourth-class matter since the Act of August 24, 1912, established for the first time in postal history an avowed merchandise classification. That act delegated to the Postmaster General, subject to approval of the Interstate Commerce Commission, the power to change the classification at will, either for purposes of greater revenue to meet expense or to include business thought desirable. From that date down, the fourth class has contrived to bring within its scope a very large proportion of commercial transportation formerly performed by private agencies.

There are only two clauses in the Constitution of the United States that could have any application, one, the so-called interstate commerce clause reading in part:—"The Congress shall have power to regulate commerce among the several states (Art. I, Sec. 8, clause 3)." The power to "regulate" is quite distinct from conducting interstate commerce; moreover, the clause would not give any power over purely intrastate commerce now carried by post.

The other clause referred to is the postal clause, which must be examined to see if it authorizes and empowers the federal government to conduct merchandise transportation as a business. The clause reads:—"Congress shall have power to establish post-offices and post-roads (Art. I, Sec. 8, clause 7)."

Was commercial merchandise transportation in mind when the clause was adopted? This can hardly be the case, since a postal establishment was created to handle postal matter, i. e., letters, newspapers, dispatches and the like, but not merchandise as a commercial proposition.

The clause as it stands in the Constitution is merely a more concise statement of Article IX, Articles of Confederation, that preceded it; nothing material was changed and everybody understood exactly what was meant. That clause reads thus:—"The United States in Congress assembled . . . shall also have the sole and exclusive right and power of establishing and regulating post-offices from one state to another, throughout all the United States, and exacting such postage on the papers passing through the same as may be requisite to defray the expenses of said office."

The meaning is the same today as it was in 1789, hence there is no warrant in the Constitution for the commercial transportation of merchandise as a government function.

Strange to say, the constitutional question has never been squarely raised in the courts, but there are many decisions of the highest authority holding directly or indirectly that legitimate mail or postal matter is none other than that contemplated when the Constitution was adopted.

CHARLES WELLS.

Railroads' Transport Monopoly Is Gone

CHICAGO.

TO THE EDITOR:

For 50 years the railroads in America have had a practical monopoly of transportation from station to station. Regulatory statutes of the states and of the federal government were rightly based on this monopoly feature. This monopoly is gone forever. Alternative methods of transportation are available to shipper and passenger, vastly superior under many circumstances to existing railroad facilities.

The primary need, it seems to me, is a change of viewpoint of the entire railroad personnel and of the public. Railroad men must learn to think of their business in terms of competitive merchandising of complete transportation service — maximum service "at what the traffic will bear." The public must be taught to think of railroad transportation as one method of service entitled to fair treatment with all others. The reason for regulatory statutes has largely disappeared with the breaking of the railroad transportation monopoly. It was a monopoly of facts. The facts have changed and the monopoly is gone. Personally, I would like to see the Transportation Act amended so as to secure fair competition for all transportation agencies and the rate structure left to the transportation agencies.

When I was a boy on a farm near Tecumseh, Mich., there was no way to reach Detroit, Toledo, Chicago or other cities with passengers or goods except by railroad. The local station agent was a czar. If one did not like his methods or fancies, it was "just too bad." The railroad monopoly at Tecumseh, as it is in practically every city and town in the United States, is gone. Today most kinds of produce can be and are loaded on trucks at the local plant—even at the farmer's door—and delivered to the user's warehouse or store in Detroit, Toledo, Chicago or other cities in a few hours at greatly reduced costs, eliminating a vast amount of "red tape." For me to get to the farm in the old days was a day's railroad journey. I can take my motor car and my family of four and drive there now in six hours (225 miles) in greater comfort and at less cost than I can go alone by railroad, and I am free from the annoyance of petty bureaucrats. Most of the people of the United States are similarly freed. They will not go back to the old railroad transportation methods.

Running railroads must be thought of as merchandising service with more and more of "the customer is always right" spirit. It calls for some very fundamental thinking in merchandising service. Perhaps it is too much to expect a change in point of view in a short period. A start must be made somewhere, or the railroad personnel will be government employees—caretakers for outmoded transportation agencies and thinking of government pay checks.

To bring about suitable changes calls for tactful industrial statesmanship of a high order, with a realistic grasp of the fundamental transportation changes of the last decade, and a clear understanding of the social and economic results of the changes.

A decade has freed America from a transportation monopoly. Can the men who had the monopoly think in terms of competitive service? The railroads are still the backbone of transportation, controlling instrumentalities of commerce with enormous possibilities of service. Can the men in charge of railroads think in terms of competitive service to the public without a monopoly?

CARL V. WISNER.

Railway Films; and More on Low-Priced Dining-Car Meals

NEW YORK.

TO THE EDITOR:

The Railway Gazette (London), November 13, 1931, under the caption "Railways On The Screen", refers to the practice of British railways in concert with the motion picture producers to show on the screen in public theatres authentic detail of railway operation whenever this can be consistently done. The purpose, of course, is to advertise before the public as clearly as may be done such features of train operation as may appeal and thereby attract patronage to the railroads.

There is an item of detail in the showing of American pictures on the screen where train operation is involved that might be much improved. For instance, it is rarely that the name of the railroad is shown when passenger trains are flashed upon the public screen. There may be some ethical or legal reason for this that the undersigned is not familiar with. However, if such identity may be shown it should be. The railroad man who is familiar with the railroads of the country knows when he sees a locomotive with cylindrical tender tank it is undoubtedly of Southern Pacific or Union Pacific ownership; that type of tank

being standard on those lines. Also, the showing on the screen of passenger cars having distinctive underframe lines indicates probable ownership by the Santa Fe. There are other features whereby men familiar with railroads may detect ownership.

But if legitimate to do so, why not whenever possible show the name of the railroad; that is, expose enough of the equipment to view in order that the public may see clearly ownership identity?

Also, why not produce an occasional film picture of such character as will depict the historical phases of the building and development of our American railroads, with enough detail disclosure in the final stage of the production to indicate the present high degree of operation and physical comforts offered the public in passenger equipment?

Probably hundreds of thousands of the younger people of the country have not had the experience or pleasure of riding on an American modern train. They should be educated by every means the traffic department can command.

I believe "The Union Pacific Trail" by Zane Grey was once filmed and it might well be renewed before the public. There is much historical color in the background of both the Santa Fe and the Northern Pacific and other railroads. The Northern Pacific was built during the days of the Sioux Indian wars, culminating in Custer's "Last Stand" 50 miles south of the main line of the Northern Pacific in Montana. Several years ago a picture entitled "The Flaming Frontier" involving a frontier scene something similar to Custer's battle was much in public favor. The Northern Pacific could be brought into a picture of this kind. Why not film revolutionary history along the line of the Chesapeake & Ohio or the Baltimore & Ohio?

Of course, time, effort and money are required in the production of a great historical drama but from many points of view of both railroad and motion picture producer such productions quite possibly may prove mutually remunerative.

Also, the famous "Cheltenham Flyer" of the Great Western of England carries a supply of baggage labels denoting the fine character of the train; these are supplied to passengers upon request who desire to identify themselves as having been patrons of the train. This train ranks high in popular esteem. Why not have our finer American trains supplied with such identification labels? We have many famous and handsome trains on both Eastern and Western railroads and it is probable many passengers would be pleased to have a baggage label suitably characterizing the identity of any one of the de luxe trains patronized.

The "Popular Cafe Car"

Also, I note in the *Railway Age* and elsewhere reference made to a less expensive style of serving food to passengers; for instance in a car equipped as a cafe with counters. I first heard this suggested on the Pacific Coast, specifically by a Union Pacific System employee, in April, 1932. It appears to me, however, that the advocates of such desirable service do not encompass as much as there could be in the detail of the innovation.

My own view of the proposition is a "Popular Cafe Car" which should be kept open until midnight; to become a rendezvous during the hours between regular meal hours and also during the later evening hours. The serving of foods from buffets in coaches or by waiters carrying foods and liquids through the coaches from the diner should be discontinued. The "Popular Cafe Car" should not only be a substitute for such improvised serving but it would also obviate the supposed need for carrying the traditional American "train butcher." The "Popular Cafe Car" should serve plain but substantial foods; with a good grade of paper napkins; inexpensive silver and china ware; sell fruits, tobacco, newspapers, magazines and candies. A lengthwise counter should be provided with swivel chairs. Prices should be reasonable and if a tip were offered by the patron it should be modest—perhaps 10 cents would be sufficient. These cafe cars could be made as popular as any popular counter cafe on the main thoroughfare in the city.

Many passengers are annoyed when riding in coaches because of the custom of serving foods to fellow passengers with consequent littering of window sills and floor with refuse. They are annoyed by the almost constant voluable salesmanship activities of the "train butcher" and while there are many well behaved "train butchers" there are some who are tactless and at times are either condemned or ridiculed by the passengers. The passenger wants quiet repose and cleanliness in the coach. The "Popular Cafe Car" would insure all of this.

EDWIN SWERGAL.

Odds and Ends . . .

More Evidence of A Business Pick-Up

What is said to have been the first train-load movement of automobiles into the West and Southwest for more than 18 months was received at St. Louis, Mo., on May 3 on its way to Kansas City, Mo., over the St. Louis-San Francisco.

Faith Justified

Diogenes, if he is still in search of an honest man, would do well to circulate among the patrons of the Chicago, North Shore & Milwaukee and the Chicago, Aurora & Elgin. During the bank moratorium in March, the ticket agents of these railways issued several thousand railroad tickets on credit. A check made a few days ago disclosed that this experiment in faith had been completely successful. No ticket agent had lost so much as a nickel through the extension of this credit courtesy.

Claim Safety Record

The latest claimant of safety honors is the car department at the Bristol shops of the Norfolk & Western. Up to March 28, an average of 25 men had worked in this department for 3,406 days without a single reportable injury. Assuming that these 25 men worked 280 days a year during this period, the record means that not one reportable accident has happened in that shop for the past 12 years. Assuming further that each of the 25 men employed there has worked 8 hr. a day for the past 3,406 days, it develops that the no-accident record covers a total of 681,200 man-hours.

"Dapper Joe" Retires

Joseph T. Ross, the most color-conscious conductor on the Central of New Jersey—he was rarely seen without a blue carnation in his lapel when working on his train, the Blue Comet, between New York and Atlantic City, N. J.—retired from active service the other day after more than half a century of continuous service on the railway. Mr. Ross was born in Newark, N. J., in 1863 and entered the employ of the Jersey Central in 1879 as a passenger brakeman. He became a passenger conductor in August, 1888. As conductor of the Blue Comet from the day of its inauguration, he gained the acquaintance and friendship of hundreds of satisfied passengers, including many famous men and women.

First Nautical Fashion Show

Possibly the Denver & Rio Grande Western will want to have a display of mountain-climbing costumes on the Scenic Limited, after it hears this story. Casting about for ways to attract more passengers to its Sandy Hook steamers, the Central of New Jersey hit upon the idea of having a fashion show on the broad decks and in the ballroom and dining salon of the good ship, "Sandy Hook," on its daily voyage from New York to Atlantic Highlands, N. J., and back. A New York Department store liked the idea, with the result that the first nautical fashion show ever to be held on the deck of a New York harbor ship was staged on May 22, 23 and 24. Fifty models displayed nearly 100 types of sports attire.

Railroad President Honored

John T. Cochrane of Mobile, Ala., who is president of three railroads—the Alabama, Tennessee & Northern, the Mississippian and the Alabama & North Western—and a member of the executive committee of the American Short Line Railroad Association, has been selected to serve as governor of the 26th district (Alabama) of Rotary International for 1933-34. Incidentally, he is probably one of the very few railroad officers in the country to have a highway bridge named after him. Mr. Cochrane worked out the financial plan for a highway bridge, 10½ miles in length, across Mobile Bay and proposed it as a community project. The bridge was constructed under his direction and in recognition of his service to the community, it was named "Cochrane Bridge."

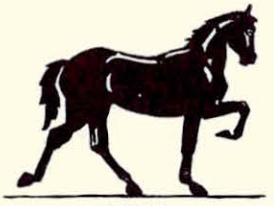
News Department begins on next left-hand page

Why Any 10-Year Old Locomotive Is Inadequate

What Has Happened To HORSEPOWER!

1912
475 H. P.
per driving axle

1922
575 H. P.
per driving axle



1932
OVER 1,000 H. P.
per driving axle

What Has Happened To FUEL CONSUMPTION!

1912
6½ LBS. COAL
per drawbar
horsepower

1922
5 LBS. COAL
per drawbar
horsepower

1932
3 LBS. OR LESS
per drawbar
horsepower

SO rapid has been the advance of locomotive design that not a single locomotive in this country over ten years old can begin to hold its own with the really up-to-date power plant on wheels known as the Super-Power locomotive.

LIMA LOCOMOTIVE WORKS
INCORPORATED

LIMA OHIO

NEWS

New Hampshire Regulates Highway Freight Carriers

Also requires registration of all out-of-state motor trucks of three or more tons

The legislature of New Hampshire has passed and the governor has approved a bill applying some degree of regulation to both common and contract motor carriers, and another measure requiring non-resident operators of such vehicles to register them in New Hampshire. The hours of service of drivers has likewise been limited.

Common carriers must obtain a certificate of registration and special number plates from the Public Service Commission before they are permitted to operate. In applying for such registration the common carrier must file a schedule of rates, which must be computed on a mileage basis. An indemnity bond is required and a statement of the routes over which the applicant's vehicles will operate. Contract carriers are also required similarly to be registered and provided with special number plates. They do not, however, have to file a schedule of rates unless they operate in competition with common carriers. Exemption from such registration is provided for vehicles used in conveying the owner's own products, for vehicles not principally engaged in for-hire transport, for vehicles operating within cities or ten miles therefrom (with not more than two trips a month beyond the ten-mile zone), government vehicles and mail trucks.

Carriers are not permitted to vary from the schedule of rates filed with the commission, but may file new rates at any time. The records on file with the commission are open for public inspection. Driver's hours of service are limited to 12 hours continuous, after which he must be allowed 8 hours of rest, or to 16 in the aggregate out of 24, in which latter case 10 hours of rest is required. The common carrier registration fee is fixed at $5 and that of contract carriers at $2. Certificates may be suspended or revoked by the commission for violations of the act.

Motor vehicles from without the state of a carrying capacity of not more than three tons, if they are properly registered in their own jurisdictions, are permitted in New Hampshire without registration for 20 days in any calendar year, with the exception in the case of owners of more than one vehicle that the 20-day limit is applicable to the aggregate time of all such vehicles. Vehicles of more than three tons' capacity from other states must be registered in New Hampshire. Unlimited reciprocity up to 15 miles within the state is permitted for vehicles under three tons to residents of other states who reside within 15 miles of the New Hampshire line. As an alternative to registration, out-of-state trucks may move into New Hampshire on special permits which, however, are limited to five days in the calendar year.

The legislature defeated a measure advanced by trucking interests which sought to raise the maximum load limit on the highways from 10 to 13 tons.

Air Brake Association

The Air Brake Association has moved its headquarters from the Grand Central Terminal building to Room 2205, 150 Broadway, New York, effective June 1. T. L. Burton is secretary.

D. L. & W. to Pre-Cool Cars

The Delaware, Lackawanna & Western is now pre-cooling all sleepers, parlor cars and diners on its through trains. At Hoboken, N. J. and Scranton, Pa., equipment has been installed which cleans and dehumidifies the air and reduces the interior car temperature to about 70 degrees.

Reorganization Plan to Receive Further Study

President Roosevelt has decided to postpone for further study the plan for governmental reorganization, one part of which proposed the transfer of various bureaus of the Interstate Commerce Commission to a transportation bureau in Department of Commerce.

Canada's Railway Bill a Law

Royal assent was given in the Senate chamber last week at Ottawa by Chief Justice Duff as Deputy Governor-General to the railway bill giving effect to the recommendations of the Royal Commission on Transport. The provisions of the act were described and discussed editorially in the *Railway Age* of May 20, page 721. The act becomes effective on July 1.

Railroad Credit Corporation Closes Loaning Activities

The Railroad Credit Corporation wound up on May 26, fifteen months' administration of the loan pool derived from the freight surcharges that took effect Jan. 2, 1932, by authorizing loans of $7,500,000 to nine railroads. This brought the total of loans authorized to railroads to about $73,000,000. Under the terms of the corporation's charter, all loans were used to meet interest payments. This closed the lending phase of the corporation's activities.

Henceforth the corporation will act as a liquidating agency to repay to the railroads the amounts they contributed to the loan pool from the surcharge collections.

Limitation on Salaries Imposed by the R. F. C.

New conditions to apply to all future loans are outlined by Chairman Jesse H. Jones

It will be the policy of the Reconstruction Finance Corporation to impose salary-limitation conditions in all future loans to railroads or other corporations paying "excessive" salaries, according to a statement issued by Jesse H. Jones, chairman of the corporation, announcing that although Congress has not yet adopted the proposed legislation limiting salaries of officers of corporations borrowing from the corporation, its board of directors had made it a condition of the loans to the Southern Pacific Company authorized on May 25 that, in the event such a law is passed by Congress, the officers of the Southern Pacific will put whatever salary limitation Congress may impose into effect from June 1.

Regardless of Congressional action, the corporation made it a condition of the Southern Pacific Company loan that salaries be reduced according to the following percentages: Any salary that has heretofore been more than $100,000 per year, to be reduced not less than 60 per cent, including previous reductions; salaries that have ranged from $50,000 to $100,000, to be reduced not less than 50 per cent, including previous reductions; those ranging from $25,000 to $50,000 to be reduced not less than 40 per cent, including previous reductions; those ranging from $15,000 to $25,000, to be reduced not less than 25 per cent, including previous reductions; those ranging from $10,000 to $15,000, to be reduced not less than 15 per cent, including previous reductions; and those salaries and wages from $4,800 up to $10,000 to be reduced not less than 10 per cent, including reductions heretofore made. Deductions of approximately 25 per cent have already been taken by the higher salaried officials of this road. Union contracts are not affected by the corporation's requirements.

"These are the maximum salaries that can be paid by the borrowing corporation during the continuance of the loan of the Reconstruction Finance Corporation, or until the road is earning all fixed charges. The road is also required to go to bankers and the public for funds to repay the government as soon as the money market will permit," Mr. Jones said. "While the Southern Pacific Railroad loan is the first in which these salary reductions have been required, it will be the policy of the corporation to impose similar conditions in all

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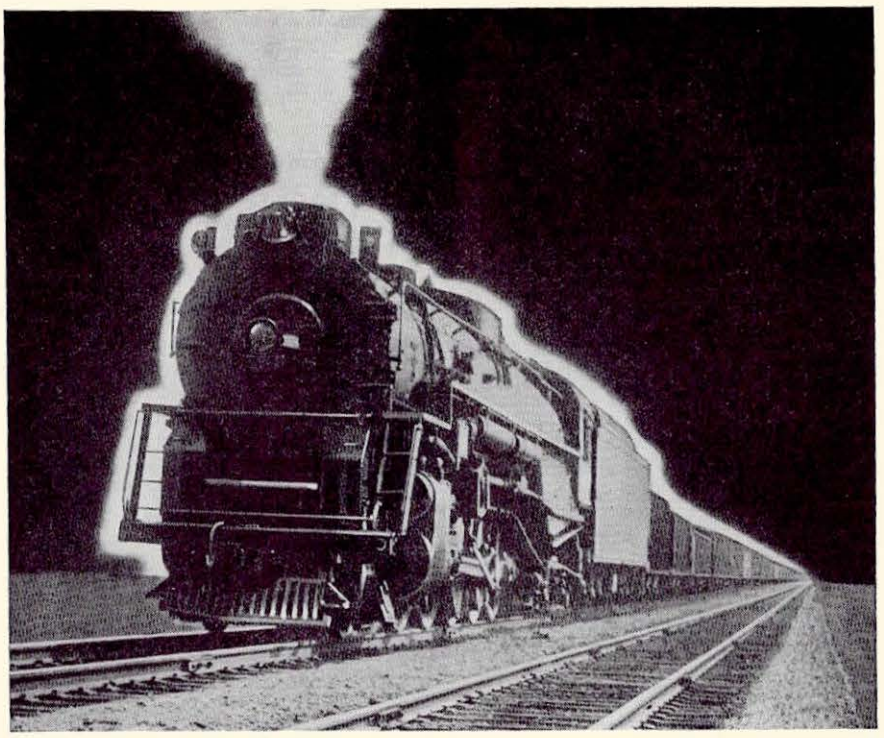

BOOSTER POWER
Raises Earning Power

On the Chesapeake and Ohio Railway 45 modern Super-Power locomotives, Booster-equipped, are contributing to an operating record that is unique.

Although the road's revenue tonnage decreased 16.6% in 1932, its revenue tonnage per train mile increased 7.3%—a splendid tribute not only to progressive management but to modern motive power.

By replacing Mallets with fast-moving 2-10-4 locomotives equipped with The Locomotive Booster, greater loads were handled at far lower cost.

Although the world's largest two cylinder locomotives at the time they were built, these 2-10-4's incorporated The Locomotive Booster as a fundamental part of the design.

They have equal starting power to the Mallets but have 8% more sustained power at 30 m.p.h., coupled with ability to make a continuous run over the division without reducing tonnage.

On any locomotive, large or small, The Locomotive Booster will improve operation and reduce costs.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

future loans to railroads or other corporations paying excessive salaries."

The proposed legislation referred to, as passed by the Senate, would impose a maximum of $17,500 but as passed by the House last week the bill was amended to substitute the words "what appears reasonable to the Reconstruction Finance Corporation."

The loans referred to were approved by the Interstate Commerce Commission on May 9 and by the corporation on May 25, including one of $22,000,000 for principal and interest of maturing equipment trust certificates, interest on funded debt, and to pay certain judgments, and a "work loan" of $1,200,000 for the construction of a passenger terminal at Houston, Tex.

Hale Holden, chairman of the Southern Pacific, was shown in the report of railroad salaries compiled by the Interstate Commerce Commission last year as having received a salary of $150,000 in 1929, although this had been reduced to $135,000 by March 1, 1932, and other reductions were made later. The condition imposed by the corporation would reduce this to $60,000. The salary of the vice-chairman of the executive committee in 1929 was $85,000 and that of the president was $100,000.

I. C. C. To Investigate Refusal of States To Apply Surcharge

The Interstate Commerce Commission has ordered an investigation of the action of state authorities of nine states in refusing to allow the continuation beyond March 31 of the surcharges authorized for interstate traffic in Ex Parte No. 103. The states are: Nevada, Washington, Kansas, Iowa, South Dakota, North Dakota, Louisiana, Texas, Utah.

Senate Increases I. C. C. Appropriation

The Senate on May 30 adopted the amendment to the independent offices appropriation bill proposed by its appropriations committee increasing the amount allowed by the Interstate Commerce Commission by $150,000 above the $5,040,000 allowed in the bill as passed by the House to provide for additional hearings outside of Washington.

Chicago-Tulsa Sleeping Car

The Alton and the St. Louis-San Francisco have established through sleeping car service between Chicago and Tulsa, Okla. The cars leave Chicago at 11.30 a. m. and arrive in Tulsa at 6.35 the next morning, being included in the Alton Limited of the Alton and the Meteor of the Frisco. Returning, the cars leave Tulsa at 7.15 a. m. by No. 4 of the Frisco and arrive in Chicago at 7.43 a. m. on the Midnight Special of the Alton.

A. S. T. M. to Meet at Chicago

The American Society for Testing Materials will hold its thirty-sixth annual meeting at the Hotel Stevens, Chicago, on June 26-30. In addition to the usual program, which will include the presentation and discussion of committee reports and papers on subjects embraced in the society's wide range of activities, the members will participate on Wednesday, June 28, in the elaborate program for the celebration of Engineers' day at the Century of Progress Exposition.

R. F. C. Loans To Railroads

Up to the close of business on May 22 the Reconstruction Finance Corporation had authorized 119 loans aggregating $377,689,426 to 65 railroads, as compared with 116 loans to 65 railroads up to April 22. Loans authorized to the Southern Pacific since have brought the total up to $400,889,426. Of the amount covered by the report, $2,383,332 had been canceled or withdrawn, $17,421,336 remained at the disposal of borrowers and $357,884,757 had been disbursed to them, of which $20,523,640 had been repaid.

Jersey Central to Substitute Buses for Trains

The Board of Public Utility Commissioners of New Jersey has granted the Central of New Jersey permission to substitute buses for four passenger trains which have been operated during the Summer season in each direction between Matawan, N. J., and East Long Branch. The estimated saving in operating expenses to result from the substitution is $2,571 per month. The bus services will be provided by Boro Busses-Rollo Transit Corporation under contract with the C. N. J.

Great Western of Great Britain Inaugurates Air Services

The Great Western of Great Britain, which on April 12 became the first British railway to utilize the air-service operating powers obtained from Parliament in 1929 by all British roads has now extended its original Cardiff-South Devon air route to Birmingham. The air services are provided under an arrangement with the Imperial Airways, Ltd.

Planes assigned to the run are painted in Great Western colors, and the interior upholstery is similar to that used in first class compartments of the G. W. R. trains. Arrangements for handling baggage permit the patrons of the air service to have heavy luggage transported by rail and delivered at destination without extra charge.

Temperatures of Tomatoes in Transit

The Freight Container Bureau of the American Railway Association, (30 Vesey Street, New York City) has issued a pamphlet of 17 pages, with elaborate diagrams, reporting tests made by its engineers of the temperatures of tomatoes in ventilated cars, on a trip from California to Kansas City, in October, last; four cars, of the Pacific Fruit Express. A sum of over three million dollars has been paid out by the railroads in the last four years for damage to tomatoes in transit; and as a means of preventing some of the damage the carriers have encouraged the packing of lug boxes crosswise of the car instead of lengthwise; this diminishes the breakage of boxes and there is less damage to tomatoes by bruising; but it has been claimed that with boxes packed crosswise the ventilation is not so good, causing more loss from decay. The tests, covering 120 hours, and including reading of temperatures in boxes every hour or oftener, have failed to show any indication of higher temperatures because of the cross-wise loading. Electrical resistance thermometers were inserted in the fruit and in positions between boxes, with wire connections to reading dials in the caboose of the train.

The Canadian Roads in April

Net operating revenues of the Canadian Pacific in April totalled $538,465, as compared with $918,483 in April of last year and represents a decrease of $380,017. The company continued, however, to make important savings in operating expenses, for the gross revenues for the month totalled $7,921,872, a decrease of $1,589,233 from the gross for April, 1932, while operating expenses at $7,383,407 showed a decrease of $1,209,215 from those of $8,592,623 reported for April of last year.

Net for the four months of the year ended with April amounted to $1,835,944, as compared with $2,953,898 in the corresponding four-month period of last year, a decrease of $1,099,953. Gross for the four months amounted to $31,494,577, a decrease of $6,536,564, which was in important measure offset by a cut in operating expenses, the total for the four months of $29,658,633 showing a decrease of $5,436,611 from the corresponding period of the preceding year.

Gross revenues of $11,110,406 are shown for the Canadian National System during April, a decrease of $2,419,545 from the preceding year. Operating expenses in April this year were $11,245,245, a decrease of $1,501,728 from the expenses of April, 1932, leaving a net revenue deficit for the month of $134,839 as against net revenue in April, 1932, of $782,977, a decrease of $917,817.

For the four months gross revenues have been $41,688,433, a decrease of $11,496,822 as compared with the same period of last year. Operating expenses totaled $45,846,515, a decrease of $7,885,314 and the 1933 period showed a net revenue deficit of $4,158,082 as against a net revenue deficit in the 1932 period of $546,574, an increase of $3,611,508.

Cab Signals Authorized on the Long Island

The Interstate Commerce Commission, Division 6, in an order dated May 20, has authorized the Long Island to discontinue the use of automatic train control, the continuous induction type, code system, and to use cab signals of this type without the brake setting apparatus. The practice authorized is the same as that on the Pennsylvania recently permitted by a similar order.

The Long Island has the continuous induction system in use between Sunnyside, N. Y., and Port Washington, 16 miles, and between Jamaica and Babylon, 27 miles, a total of 83 miles of track; 33 steam freight locomotives, 15 electric locomotives (passenger) and 295 multiple-unit cars. The Whitestone Branch, 4.6 miles long, single track, was equipped but this part of the line has been abandoned.

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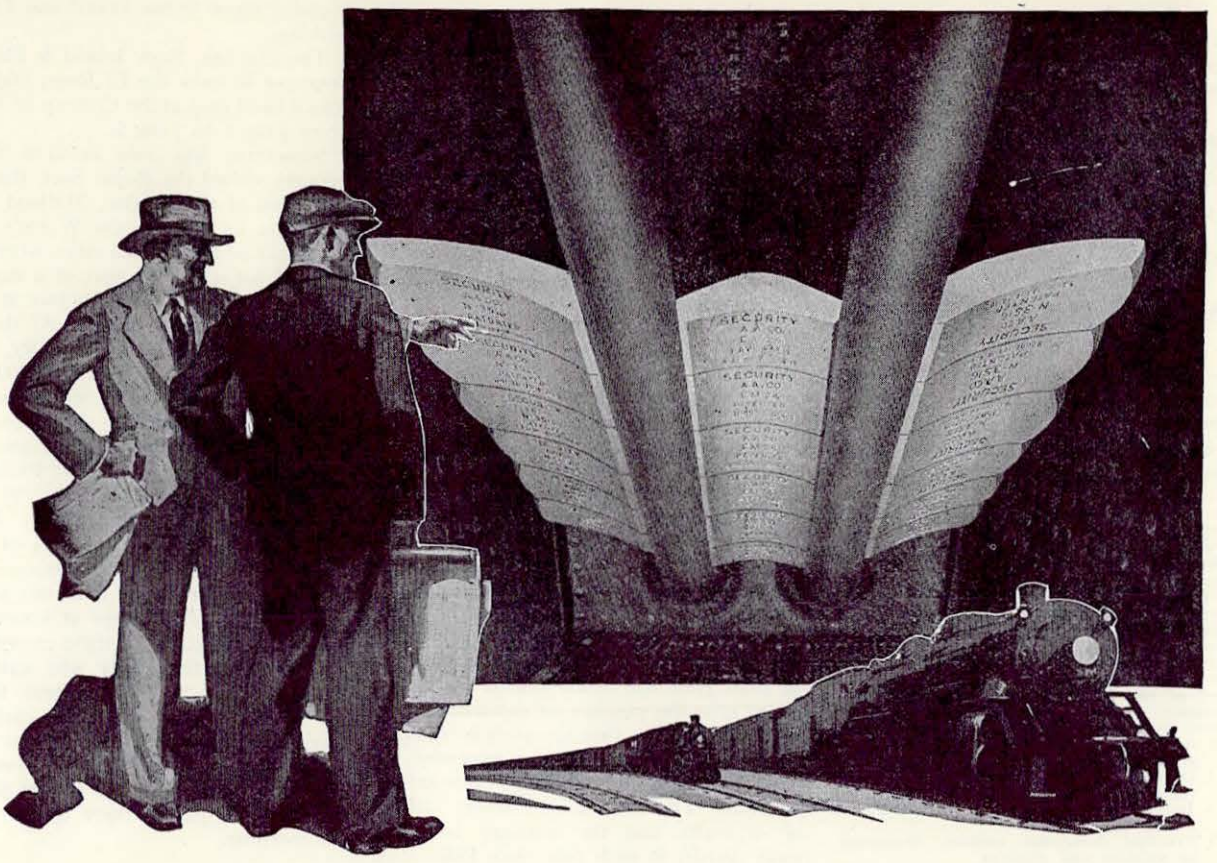


MODERN OPERATION Is *Tough* On Arches

RUNS have lengthened from 150 to 500 to 800 miles and more. Firebox temperatures have risen until 2800° F is now not uncommon. Annual locomotive mileage has steadily increased.

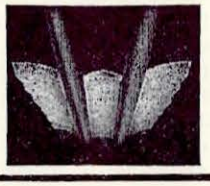
All these factors have helped improve railroad operation but they have worked a hardship on locomotive Arches.

But due to the continuous development and improvement of the locomotive Arch by the American Arch Company, Arches have performed exceptionally well under increasingly difficult conditions.

For 23 years, American Arch Company has been studying locomotive combustion problems and improving Arch Brick service.

There's More To
SECURITY ARCHES
Than Just Brick

HARBISON-WALKER REFRACTORIES CO.
Refractory Specialists



AMERICAN ARCH CO.
INCORPORATED
Locomotive Combustion Specialists

The estimated annual saving by the change is $16,000, together with probable savings from having fewer undesired stops. The road is convinced that the change will result in more reliable operation without an appreciable sacrifice of safety. A part of the road under consideration has semaphore roadside signals and a part position-light signals; a part color-light signals, and a single-track section worked by the manual block system.

Freight Claim Division at Louisville June 6

The annual meeting of the Freight Claim Division of the American Railway Association will be held at Louisville, Ky., on June 6-8, inclusive. The program of the meeting is as follows:

June 6

Invocation
Address by W. R. Cole, president, Louisville & Nashville
Address by M. J. Gormley, president, American Railway Association
Address by Chairman H. J. Freeman, freight claim agent, Pennsylvania
Memorial services
Report of the General Committee
Report of the secretary
Report of the Prevention committee
A program depicting freight loss and damage prevention progress
(1) A program of the general committee to prevent carload damage
(2) Damage to fresh fruits, melons and vegetables
(3) Innovations in packing and loading freight
(4) Practical prevention methods illustrated by exhibits and displays
General discussion of prevention activities.

June 7

Election of members of the Arbitration and Appeal Committee
Report of Committee on Rules of Order
Report of Committee on Overcharge Rules
Shipper-Carrier Joint Luncheon under the auspices of the Louisville Transportation Club; M. J. Gormley, principal speaker
Election of officers
Joint report of the Committee on Loss and Damage Rules and the Committee on Overcharge Rules.

June 8

Report of the Committee on Loss and Damage Rules
Unfinished business
New business
Installation of officers
Adjournment.

Jensen Heads Eastern Perishable Inspection Bureau

W. S. Jensen, supervisor of perishable inspection, Merchants Despatch, Inc., and G. E. Marvin, chief fruit and vegetable inspector, Trunk Line Freight Inspection Bureau, have been appointed manager and assistant manager, respectively, of the perishable inspection agency, which, as announced in the *Railway Age* of April 29, will be opened on July 1, under the auspices of the Presidents' Traffic Conference—Eastern Territory.

Carriers participating in the agency will be eastern railroads generally in the territory Chicago, St. Louis, Mo., and east, Louisville, Ky., Cincinnati, Ohio, and Washington, D. C., and north and east, including New England.

A statement in connection with the new agency, issued on May 29 by D. T. Lawrence, chairman of the Presidents' Traffic Conference—Eastern Territory, reads in part as follows:

"The duties of the new agency will include the inspection of fruits, vegetables and melons wherever required in the territory above described, and like service with respect to other perishable commodities at specified points as may be requested by interested railroads.

"Upon request of any railroad the agency will also recooper broken packages. The agency will also supervise the recoopering of all packages where such service may be required at all points within the territory under its jurisdiction.

"The headquarters of the agency, which will assume responsibility for these services as of July 1, 1933, will temporarily be located at Room 1559, 466 Lexington Avenue, New York City."

St. Louis-San Francisco to Discontinue Automatic Train Control

The Interstate Commerce Commission, Division 6, in an order issued May 22, suspends its automatic train control orders as regards the St. Louis-San Francisco. This road is equipped with the National Safety Appliance Company's intermittent magnetic system on 106 miles of road, between Nichols, Mo. and Afton, Okla.; with 104 locomotives equipped. The application of the road gives the usual reasons for desiring to save the expense of automatic train control and states that the money required for its maintenance can be expended to better advantage for other desirable safety purposes. There has been a severe falling off in traffic and the company has had heavy deficits in each year since 1930.

The visibility of the roadside automatic block signals on this section of the road is very good and, where the view is relatively short, speed restrictions are prescribed in the timetable. The automatic signal failures on the Frisco are very few and no false-proceed failure has been reported during the year 1932. Efficiency tests are regularly made, and 1599 were made in connection with observance of automatic signal indications in 1932. These tests during the past ten years have demonstrated a high degree of efficiency of the personnel in train and engine service. On each division of the road, monthly train-rule meetings are held, with large attendance and the application represents that the efficiency of enginemen is such that there will be no decrease in safety.

By cutting out the automatic train control, the company will be enabled to run locomotives through between St. Louis, Mo. and Tulsa, Okla. The cost of maintenance and operation of automatic train control for 12 months ending with September, 1932, was $21,524.

Notes on the World's Fair

Six descendants of George M. Pullman attended the dedication of the all-aluminum sleeping car which is a feature of the Pullman Company's exhibit. During the dedication ceremonies, luncheon was served to guests among whom were a number of railroad officers.

A large corps of special railway detectives has been organized by all western lines entering Chicago to guard against the mulcting of World's Fair visitors by pickpockets and professional crooks.

The Joint Committee on Grade Crossing Protection of the American Railway Association is exhibiting a standard highway crossing signal in the Travel and Transport building.

The Chicago, Rock Island & Pacific has arranged to have the El Reno, Okla., high school band play at the Century of Progress from June 1 to June 5.

Something like two hundred thousand persons visited the Royal Scot, the exhibition train of the London, Midland & Scottish, (on its way to the World's Fair at Chicago) at the various cities where it was stopped for a day or part of a day, on its way from Montreal and before it reached its destination at Chicago. At the Grand Central Terminal, New York City, the total number of visitors was over 40,000 and the total at the Pennsylvania Station was about the same. At other cities (in round numbers) the totals were: Trenton, N. J., 10,000; Atlantic City, 17,000; Philadelphia, 24,000; Washington, 32,000; Pittsburgh, 28,000; and Cincinnati, 30,000. At every stop there were large numbers of persons crowded out because of the impossibility of working the stream of humanity along the aisles of the cars, except at a rather slow rate; and in addition to these crowds should be numbered thousands who gathered at stations along the route where the train did not stop. At towns of considerable size, the speed of the train was reduced to about 15 miles an hour. At Huntingdon, Pa., 400 people lined the station platforms as the train passed there at 2 o'clock in the morning.

Armco Head Urges Business to Cooperate for Prosperity

Stating that "mighty forces of government and business are unquestionably at work to move commerce and industry in the right direction," George M. Verity, chairman of the board of the American Rolling Mill Company, addressing the recent annual meeting of the stockholders of the company, expressed "great hope of and confidence in the future."

"We have," he said, "had some heart-rending examples of bad faith and of downright dishonest intent on the part of a few who worked themselves into positions of great power and responsibility. These business tragedies were a direct result of the conditions which existed in their time, and they are not the cause of our trouble. They are outstanding exceptions which no more prove that a majority of our business leadership is unsound than does the default of one member of a peaceful community incriminate the whole population.

"To, however, argue that there is not need for great improvement, for much of reform, of strengthening and of rebuilding in our whole business and social structure, after its rapid and spectacular growth, would in the light of history now recorded prove us incapable of profiting by our costly experiences.

"Business adventure of every sort must come to learn that individualistic selfish planning can only end in defeat and disaster, that the ultimate success of every soundly organized and properly managed business lies in the progress of all.

"In the past few months we have, however, miraculously recovered confidence in our National Administration to the extent

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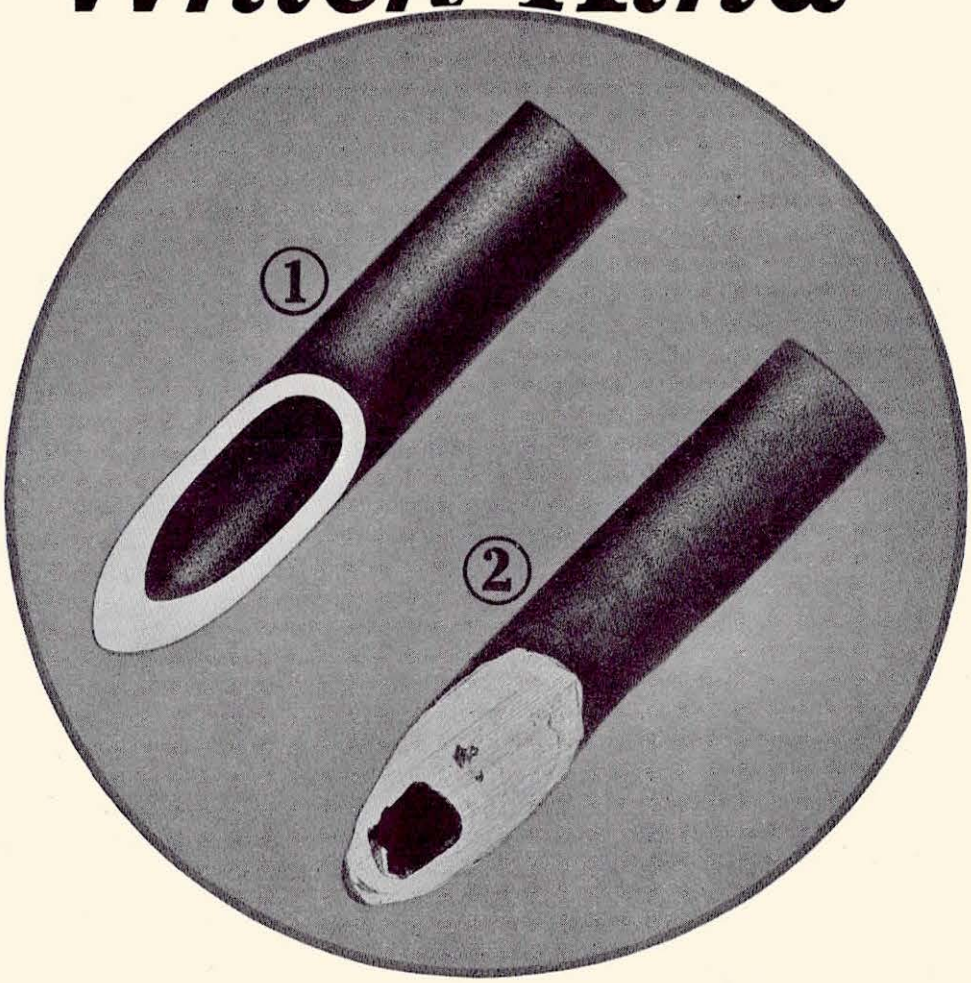
Which Kind



Is in Your Locomotives?

No. 1 is an Elesco forged return bend, showing the proper area proportions needed for full-capacity operation. All Elesco superheater units are so constructed — whether new or rebuilt by the Elesco unit remanufacturing service. To produce such return bends requires special and extensive equipment operated by men long experienced in this work.

No. 2 is a repaired superheater unit return bend recently brought to our attention. A few of these in a set would seriously reduce the superheater capacity — might even cause an engine failure — both unnecessary and expensive. It is the result of a lack of adequate facilities and experience.

There is only one way to recondition superheater units and be insured against reduced capacity or failure, and that is by having them rebuilt like new units . . . . . through the Elesco unit remanufacturing service. Write today for details.

THE SUPERHEATER COMPANY

Representative of AMERICAN THROTTLE COMPANY, INC.

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A-785

Superheaters - Feed Water Heaters - Exhaust Steam Injectors - Superheated Steam Pyrometers - American Throttles

that a marked renewal of activity has appeared throughout the length and breadth of the land. If we are to preserve the great values that still remain and are to have opportunity to recuperate the losses we have sustained, we must support the improvement now begun by every legitimate means within our power. We have witnessed a marvelous and unparalleled transformation of the nation. Former plans, policies and beliefs have been cast to the winds and we have accepted an entirely new philosophy which we will support as long as we feel it is sound."

Prince Plan Expert in R. F. C.

J. W. Barriger, railroad analyst of New York who directed the studies underlying the plan for railroad consolidations sponsored by F. H. Prince, has been appointed chief examiner of the Railroad division of the Reconstruction Finance Corporation.

John Walker Barriger, III, was born on December 3, 1899, at Dallas, Tex., and his study of railroad problems began in his early youth which was spent in St. Louis, Mo. In 1917 he entered railroad service as a shop hand at the Pennsylvania's Altoona works. In the autumn of that year he matriculated at Massachusetts Institute of Technology, being granted a leave of absence from the railroad for this purpose. In subsequent summers throughout his

John W. Barriger

college years he also worked for the Pennsylvania in the engineering department, taking leaves of absence during school months. Mr. Barriger was graduated from Massachusetts Institute of Technology in 1921 and thereafter served on the engineering corps of the P. R. R.'s Toledo division and in the following year he was assigned for a time on special duty at Polk street station, Chicago. Following a few months service with the transportation inspector of the Toledo division, he spent a period of six months in Chicago on the staff of the Northwestern region edition of the Pennsylvania News.

From 1922, to October, 1924, Mr. Barriger was a transportation apprentice, in which capacity he had a wide variety of service in yards, roundhouses, freight houses, car distribution, accident investigations, marine work, ticket offices, railway mail service and train service. He served as a member of the railroad's parcel post committee appointed by General Atterbury at the suggestion of Colonel Paul Henderson, then Second Assistant Postmaster General, which made an intensive study of the handling of this class of traffic. Following the completion of his apprenticeship course, Mr. Barriger served as transportation inspector and on the staffs of the superintendent of passenger transportation and superintendent of stations and transfers. In 1926-27 he was assistant yardmaster at Altoona and for a time served on special duty for the chief of passenger transportation.

In September, 1927, he entered the statistical department of Kuhn, Loeb & Co., New York. In October, 1929, he became associated with the investment house of Calvin Bullock and has been vice-president in active charge of International Carriers, Ltd., an investment trust organized by Mr. Bullock.

Meetings & Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—T. L. Burton, Room 2205, 150 Broadway, New York City.

ALLIED RAILWAY SUPPLY ASSOCIATION.—F. W. Venton, Crane Company, 836 S. Michigan Ave., Chicago. To meet with Air Brake Association, Car Department Officers' Association, International Railroad Master Blacksmiths' Association, International Railway Fuel Association, International Railway General Foremen's Association, Master Boiler Makers' Association and the Traveling Engineers' Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—W. R. Curtis, F. T. R., M. & O. R. R., Chicago, Ill.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—F. O. Whiteman, Union Station, St. Louis, Mo. Annual meeting, June 12-14, 1933, Cleveland Hotel, Cleveland, Ohio.

AMERICAN ASSOCIATION OF RAILWAY ADVERTISING AGENTS.—E. A. Abbott, Poole Bros., Inc., 85 W. Harrison St., Chicago. Next meeting, January 20, 1934.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—F. R. Borger, C. I. & L. Ry., 836 Federal St., Chicago.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—(See American Transit Association.).

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey St., New York, N. Y.

- Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York.
  - Freight Station Section.—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago.
  - Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York. Annual meeting, June 26-27, 1933, Hotel La Salle, Chicago, Ill.
  - Protective Section.—J. C. Caviston, 30 Vesey St., New York. Annual meeting, July 12-13, 1933, Hotel Stevens, Chicago, Ill.
  - Safety Section.—J. C. Caviston, 30 Vesey St., New York. Annual meeting, October 3-5, 1933, Hotel Stevens, Chicago, Ill.
  - Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York.
- Division II.—Transportation.—G. W. Covert, 59 East Van Buren St., Chicago.
- Division III.—Traffic.—J. Gottschalk, 143 Liberty St., New York.
- Division IV.—Engineering.—E. H. Fritch, 59 East Van Buren St., Chicago. Annual meeting, March 13-15, 1934, Chicago, Ill. Exhibit by National Railway Appliances Association.
  - Construction and Maintenance Section.—E. H. Fritch, 59 East Van Buren St., Chicago.
  - Electrical Section.—E. H. Fritch, 59 East Van Buren St., Chicago.
  - Signal Section.—R. H. C. Balliet, 30 Vesey St., New York.
- Division V.—Mechanical.—V. R. Hawthorne, 59 East Van Buren St., Chicago. Annual meeting, June 27, 1933, Congress Hotel, Chicago.
  - Equipment Painting Section. — V. R. Hawthorne, 59 East Van Buren St., Chicago.
- Division VI.—Purchases and Stores.—W. J. Farrell, 30 Vesey St., New York. Annual meeting, June 26, 1933, Hotel Stevens, Chicago.
- Division VII.—Freight Claims.—Lewis Pilcher, 59 East Van Buren St., Chicago. Annual meeting, June 6-8, 1933, Brown Hotel, Louisville, Ky.
- Division VIII.—Motor Transport.—George M. Campbell, 30 Vesey St., New York.
- Car Service Division.—C. A. Buch, 17th and H Sts., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry. 319 N. Waller Ave., Chicago.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—J. A. Senter, Ind., Agt., N. C. & St. L. Ry., Nashville, Tenn. Annual meeting, June 14-16, 1933, Baltimore Hotel, Kansas City, Mo.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the American Railway Association. Division IV.—E. H. Fritch, 59 East Van Buren St., Chicago, Ill. Annual meeting, March 13-15, 1934, Chicago, Ill. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MAGAZINE EDITOR'S ASSOCIATION.—Miss E. Kramer, M-K-T Employees Magazine, St. Louis, Mo.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C., M., St. P. & P. R. R, 11402 Calumet Ave., Chicago. Exhibit by Tool Foremen Suppliers' Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—R. E. Schindler, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division. Marion B. Richardson, Ahrens & Richardson, 30 Church St., New York.

AMERICAN TRANSIT ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York. Annual meeting, September 18-20, 1933, Hotel Stevens, Chicago, Ill.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 1104 Chandler Building, Washington, D. C. Annual meeting, January 24-26, 1934, Houston, Tex.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Annual meeting, June 21-23, 1933, Hotel Sherman, Chicago, Ill.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Station, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, Transportation Building, Washington, D. C.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—S. A. Baber, High Grade Manufacturing Co., 10418 St. Clair Ave., Cleveland, Ohio. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 2276 Wilson Ave., N. D. G., Montreal, Que. Regular meetings, second Monday of each month, except June, July, and August, Windsor Hotel, Montreal, Que.

CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, M. C. B. Belt Ry. of Chicago, 7926 South Morgan Street, Chicago.

CAR FOREMAN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, 2514 W. 55th St., Chicago. Regular meetings, second Monday of each month, except June, July and August, Auditorium Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, Room 299, 610 So. Main St., Los Angeles, Cal. Club not active at present time.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—J. F. Brady, Main and Barton Sts., St. Louis, Mo. Operation suspended indefinitely.

CENTRAL RAILWAY CLUB OF BUFFALO.—M. D. Reed, 1817 Hotel Statler, McKinley Square, Buffalo, N. Y. Regular meetings, second Thursday of each month, except June, July and August, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 2920 Utopia Place, Hyde Park, Cincinnati, Ohio. Operation suspended indefinitely.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Regular meetings second Monday of each month, except June, July and August, Hotel Cleveland, Cleveland, Ohio.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—T. D. Smith, 1660 Old Colony Building, Chicago. Meeting, June 16, 1933, Hotel Sherman, Chicago, Ill.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha St., Winona, Minn.

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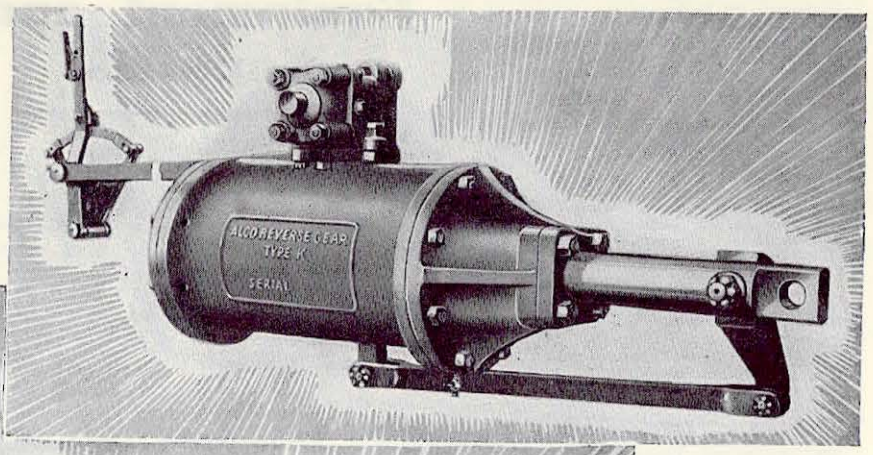
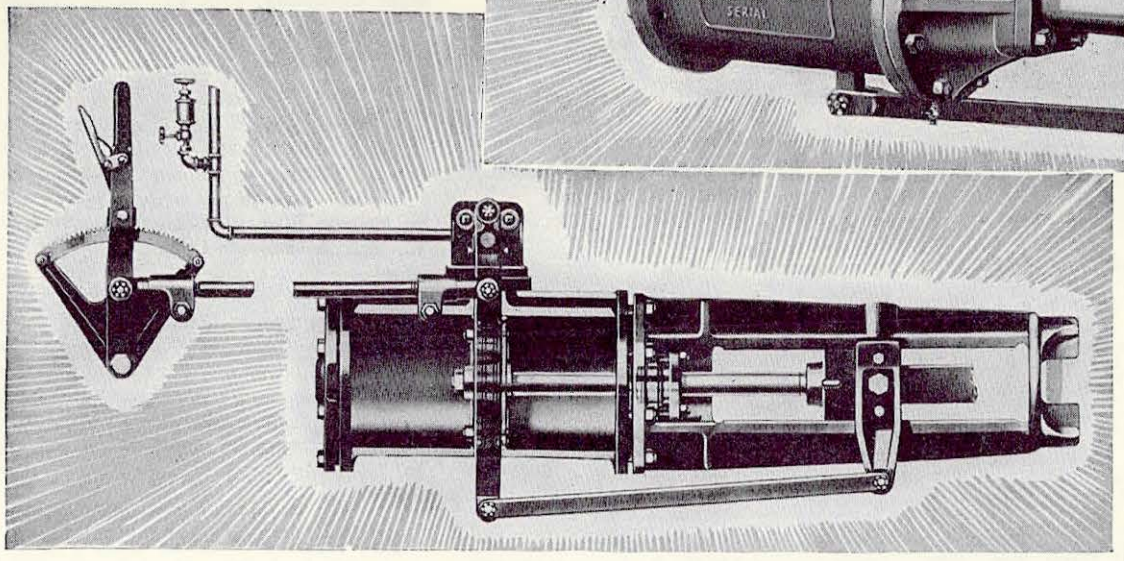


Type "K" Gear with trunk-piston rod.



Type "G" Gear with crosshead and guides.

REVERSE GEAR FACTS

CYLINDERS are accurately bored, reamed, and honed to a glass finish. They are truly round, not tapered.

Joints between cylinder and cylinder heads are ground — no gaskets used.

Piston rods are ground to size and polished. They are not combined with any part of the piston, but are held in piston by a tapered fit and large nut — same construction as the piston and piston rod on large steam locomotives.

All pins and bushings are hardened and ground to size.

And a hardened steel quadrant, with its 82 notches, permits very small changes in cut-off.

American Locomotive Company
30 Church Street New York N.Y.

MASTER BOILER MAKERS' ASSOCIATION.—A. F. Stiglmeier, 29 Parkwood St., Albany, N. Y.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 270 Madison Ave., New York. Annual meeting, October 10-13, 1933, Hotel Gibson, Cincinnati, Ohio.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—(See Railway Tie Association.).

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Suite 322, 910 South Michigan Ave., Chicago. Exhibit at A. R. E. A. convention.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section (See Safety Section, American Railway Association).

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, second Tuesday of each month, except June, July, August and September, Hotel Statler, Boston, Mass.

NEW YORK RAILROAD CLUB.—D. W. Pye, 30 Church St., New York. Regular meetings third Friday of each month, except June, July and August, 29 W. 39th St., New York City.

PACIFIC RAILWAY CLUB.—W. S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings second Thursday of each month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, Transportation Building, Washington, D. C.

RAILWAY BUSINESS ASSOCIATION.—P. H. Middleton, (Treas. and Asst. Sec.). First National Bank Building, Chicago, Ill. Annual meeting, November, 1933, Hotel Stevens, Chicago, Ill.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1841 Oliver Building, Pittsburgh, Pa. Regular meetings, fourth Thursday of each month except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 17-19, 1933.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division Purchases and Stores Division and Motor Transport Division, American Railway Association.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A. Division I.

RAILWAY TIE ASSOCIATION.—Roy M. Edmonds, 1252 Syndicate Trust Bldg., St. Louis, Mo.

RAILWAY TREASURY OFFICERS ASSOCIATION.—L. W. Cox, 1428 Broad Street Station Building, Philadelphia, Pa. Annual meeting, October 6-7, 1933, Chicago, Ill.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Annual meeting, September 19-21, 1933, Hotel Stevens, Chicago, Ill.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal. Drawer 24, M. P. O., St. Louis, Mo. Meetings temporarily suspended.

SIGNAL APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York. Meets with A. R. A. Signal Section.

SOCIETY OF OFFICERS, EASTERN ASSOCIATIONS OF RAILROAD VETERANS.—M. W. Jones, Baltimore & Ohio, Mt. Royal Station, Baltimore, Md. Annual meeting, October 7-8, 1933, Scranton, Pa.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, 4 Hunter St., S. E., Atlanta, Ga. Regular meetings, third Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta, Ga.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & C. R. R., Atlanta, Ga.

SUPPLY MEN'S ASSOCIATION.—E. H. Hancock, Treasurer, Louisville Varnish Co., Louisville, Ky. Meets with A. R. A. Division V. Equipment Painting Section.

TOOL FOREMEN SUPPLIERS' ASSOCIATION.—E. E. Caswell, Union Twist Drill Co., 11 S. Clinton St., Chicago, Ill. Meets with American Railway Tool Foremen's Association.

TORONTO RAILWAY CLUB.—N. A. Walford, P. O. Box 8, Terminal "A," Toronto. Regular meetings first Friday of each month, except June, July and August, Royal York Hotel, Toronto, Ont.

TRACK SUPPLY ASSOCIATION.—L. C. Ryan, Oxweld Railroad Service Co., Carbon & Carbide Building, Chicago. Meets with Roadmasters and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 East 98th St., Cleveland, O.

WESTERN RAILWAY CLUB.—C. L. Emerson, C. M. St. P. & P., Chicago, Ill. Regular meetings third Monday of each month, except June, July, August and September, Hotel Sherman, Chicago, Ill.

Equipment and Supplies

FREIGHT CARS

THE MANILA RAILROAD has received bids at Manila, P. I., for 10 steel superstructures for box cars.

THE PHILIPPINE RAILWAY is inquiring for 35 cane cars, some of 30-tons capacity and some of 10 tons.

PASSENGER CARS

THE BESSEMER & LAKE ERIE has accepted delivery of one pneumatic-tired rail motor coach with seating capacity for 12 passengers from the Twin Coach Corporation.

IRON AND STEEL

THE UNION PACIFIC is inquiring for 220 tons of structural steel for a bridge at Sand, Ore.

THE DELAWARE & HUDSON has ordered 3,000 tons of 130-lb. R. E. medium manganese rail from the Bethlehem Steel Company to cover its 1933 requirements. An order has been placed for 225 tons of steel with the McClintic-Marshall Corporation by I. M. Ludington Sons, Inc., Rochester, N. Y., who has the contract for grade crossing elimination work at Salem, N. Y., and an order for 215 tons of steel placed with the Lackawanna Steel Construction Corporation, by the Bates & Rogers Construction Company, the contractor, for grade crossing elimination work at Unadilla, N. Y.

SIGNALING

THE CHICAGO, BURLINGTON & QUINCY has ordered from the General Railway Signal Company material for the installation of centralized traffic control at Maxon, Iowa. The machine has seven levers and the order includes four switch machines.

THE MINISTER OF TRANSPORT of Great Britain has approved, with certain modifications, traffic pooling agreements whereby the London, Midland & Scottish, the London & North Eastern and the Great Western will pool passenger and freight revenues and curtail duplicate services between competitive points. This action sanctions the plan outlined in the *Railway Age* of October 8, 1932, page 516. The modifications relate to employee dismissals which may be involved and are also applied to the previous pooling agreement between the L. M. S. and L. N. E. which was outlined in the *Railway Age* of October 1, 1932, page 473.

Supply Trade

The Johns-Manville Sales Corporation has moved its general office from 292 Madison avenue, to 22 East Fortieth street, New York City.

C. H. Wilson has been appointed sales representative of the **Northern Equipment Company,** Erie, Pa., in the Albany district. Mr. Wilson will have his headquarters at 1403 Park boulevard, Troy, N. Y.

C. B. Archibald has resigned from the railway sales department of the Electric Storage Battery Company, Philadelphia, Pa., to go as railroad representative with the **Edison Storage Battery Division** of **Thomas A. Edison Inc.,** Chicago district office.

Ross Anderson, for a number of years southeastern district sales manager for the American Locomotive Company, and associate companies, has been appointed southeastern sales representative of the **Economy Arch Company,** St. Louis, Mo., with headquarters in the Stuart Court building, Richmond, Va.

The Harmer Railway Supply Company, Portland, Ore., has been organized by **H. P. Harmer** to engage in the sale of railroad equipment and supplies. From 1916 to 1930 Mr. Harmer was sales representative of the Pacific Car & Foundry Company at Portland, and from 1930 to 1932 he was president of the Western Steel & Equipment Corporation, Portland.

Otho C. Duryea of the **O. C. Duryea Corporation,** New York, was the recipient of the George R. Henderson medal awarded at the recent Medal Day exercises of the Franklin Institute of the State of Pennsylvania "in consideration of the meritorious railway engineering and the novel feature embodied in the invention of the Duryea railway car cushioned underframe."

The Industrial Brownhoist Corporation, Bay City, Mich., was the recipient of one of the three John Price Weatherill medals awarded at the recent Medal Day exercises of the Franklin Institute of the State of Pennsylvania. The award to the Industrial Brownhoist Corporation was made "in consideration of the high degree of ingenuity in design and execution of detail embodied in a successful machine for cleaning railway ballast, resulting in a real contribution to railroading and the solution of a maintenance problem of great moment, especially under traffic conditions of extreme density."

Arthur O. Austin has resigned as vice-president of **The Ohio Insulator Company,** division of **The Ohio Brass Company,** Mansfield, Ohio, to establish a practice of consulting engineering, with headquarters at Barberton, Ohio. He intends to specialize in engineering work in connection with transmission and distribu-

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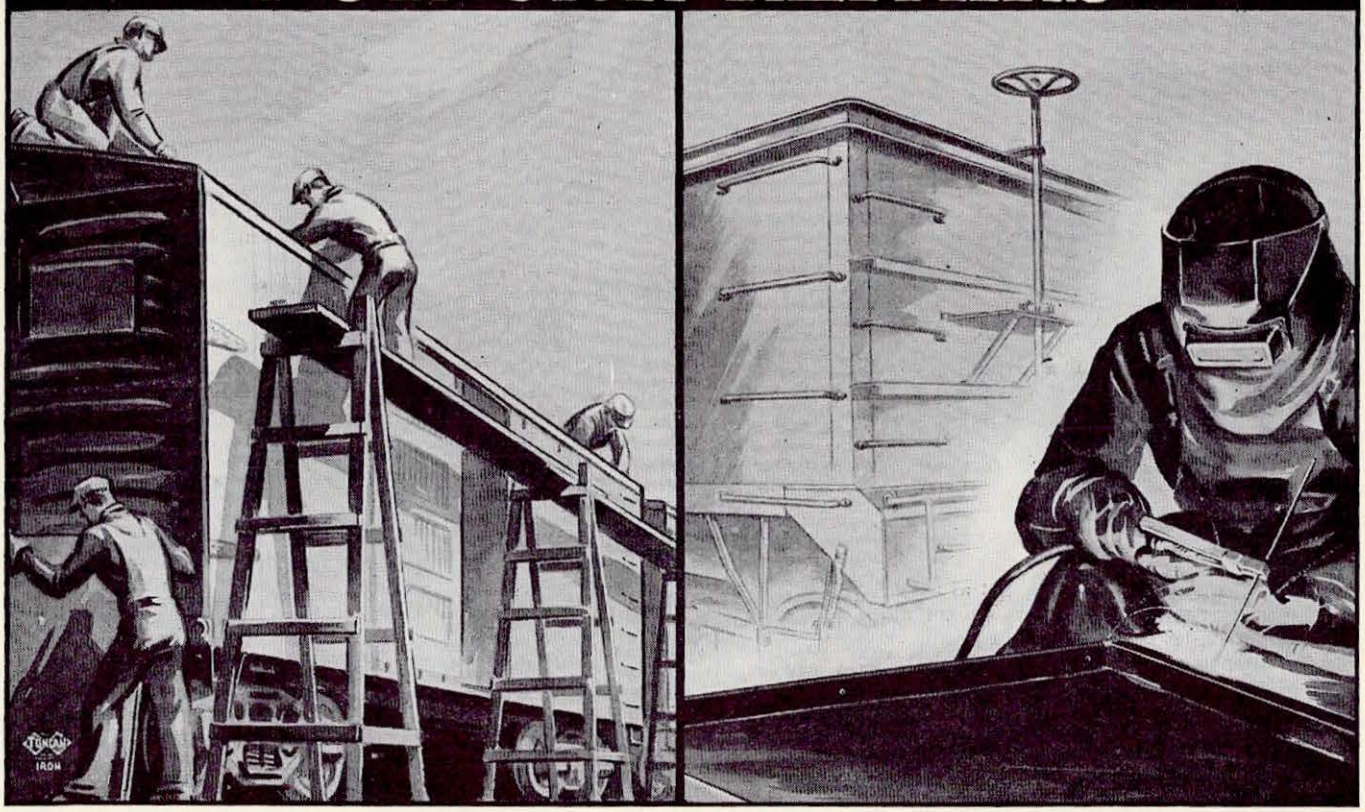
GREATER PERMANENCY FOR CAR REPAIRS



To GET full value out of the dollar you spend for car repairs use materials that will give maximum life. « Such a material is Toncan Iron. This alloy of refined iron, copper and molybdenum ranks first among the ferrous metals after expensive stainless irons and steels in its resistance to rust and corrosion. « Every car re-roofing job; every replacement of rusted plates is proof of the need for more resistant car materials. « Toncan Iron, by increasing service life where corrosion conditions are severe, gives assurance of longer life wherever rust—the destroyer—is at work. « Considered on a cost-per-year basis Toncan Iron is the most economical car repair material. « In these days of waste elimination Toncan Iron deserves full consideration in your effort to reduce costs.

Toncan Iron Boiler Tubes, Pipe, Plates, Culverts, Rivets, Staybolts, Tender Plates and Firebox Sheets • Sheets and Strip for special railroad purposes • Agathon Alloy Steels for locomotive Parts • Agathon Engine Bolt Steel • Agathon Iron for pins and bushings • Agathon Staybolt Iron • Climax Steel Staybolts • Upson Bolts and Nuts • Track Material, Maney Guard Rail Assemblies • Enduro Stainless Steel for dining car equipment, for refrigeration cars and for firebox sheets • Agathon Nickel Forging Steel.

The Birdsboro Steel Foundry & Machine Company of Birdsboro, Pa., has manufactured and is prepared to supply, under license, Toncan Copper Molybdenum Iron castings for locomotives.

CENTRAL ALLOY DIVISION, MASSILLON, OHIO

REPUBLIC STEEL
CORPORATION
GENERAL OFFICES YOUNGSTOWN, OHIO

REG. U.S. PAT. OFF. TONCAN COPPER MO-LYB-DEN-UM IRON

tion of electrical energy for power and radio purposes. The Ohio Brass Company has engaged his services in a consulting capacity, and he will also serve as a consulting engineer for several other firms. Mr. Austin was graduated from Leland-Stanford University in 1903. Serving about a year with the General Electric Company he then went with the Pacific

Arthur O. Austin

Gas & Electric Company, coming east as an insulator inspector shortly after his employ. In 1905, he became associated with the manufacture of insulators, with the Lima Insulator Company. The plant of this company was destroyed by fire in 1907. Mr. Austin then joined the Akron High-Potential Porcelain Company, Barberton, Ohio. The latter company was purchased by The Ohio Brass Company in 1910, and was reorganized under the name of The Ohio Insulator Company. He has been with this company since that time.

William A. Smith has been appointed chief engineer of **The Ohio Insulator Company,** division of **The Ohio Brass Company,** succeeding A. O. Austin. After two years at Leland-Stanford and two years at Cornell, Mr. Smith joined West-

William A. Smith

inghouse, Church, Kerr & Company, upon his graduation in 1902. In 1903, he went with Worthington Pump & Machinery Corporation, designing, testing and inspecting its products. He was later associated with the Pacific Gas & Electric Company as an insulator inspector, leaving this company in 1906 to enter the automobile business in Los Angeles. In 1912 he joined the McCumber Motor Company, spending the next four years designing airplane motors. In 1916 he came with The Ohio Insulator Company division as a designing and manufacturing engineer, instituting outstanding efficiencies in clay-forming, kiln-firing and other general manufacturing processes, as well as carrying forward his work of product-designing. He went to the west coast in 1925 to attend to personal interests, and later returned to the Ohio Brass insulator plant where he has been functioning as superintendent of the engineering department until his present appointment.

OBITUARY

Charles C. Peirce, who was formerly for 39 years connected with the General Electric Company, died on May 27, at his home in Medfield, Mass., at the age of 68.

Louis A. Hoerr, president of the Western Railway Equipment Company, St. Louis, Mo., died at the Jewish hospital at St. Louis on May 26, following an operation.

Herbert I. Lord, first-vice-president of the Detroit Lubricator Company, died on May 25 at Detroit, Mich. He was educated at the Massachusetts Institute of Technology, he joined the sales force of the American Radiator Company, at Boston, Mass., and was later transferred to Chicago. Subsequently, he became first vice-president of the Detroit Lubricator Company, one of the subsidiary companies of the American Radiator & Standard Sanitary Corporation, New York.

TRADE PUBLICATIONS

FROM FAIR TO FAIR.—Commemorating the progress made in the expansion of its plant facilities between the dates of the World's Columbian and the Century of Progress expositions, the Inland Steel Company, Chicago, has issued a 32-page pamphlet with an embossed metal-surfaced cover in which the growth of this company is definitely associated with the economic development of the middle west now being celebrated at Chicago. Views and drawings of various mills and furnaces are followed by a section devoted to the exposition itself, and this in turn by a pictorial section on Inland products and their applications.

BARCO POWER REVERSE FLEXIBLE JOINT.—A two-page catalogue, No. 120, has recently been issued by the Barco Manufacturing Company, 1801 Winnemac avenue, Chicago, covering the new Type 7T-8T flexible joint recently developed by this company for use in conjunction with power reverse gears. The catalogue illustrates clearly not only the construction of the new joint in assembled and cross-sectional views, but its application and piping connections to facilitate meeting the new Interstate Commerce Commission requirements for steam as well as air connections to all power reverse gears.

Financial

ANN ARBOR.—*R. F. C. Loan Denied.*—The Interstate Commerce Commission has denied approval of the application of the receivers for a loan of $365,000 from the Reconstruction Finance Corporation.

CHICAGO & EASTERN ILLINOIS.—*Bond Deposit Asked.*—A committee of large holders of this company's bonds, headed by C. M. Shanks of the Prudential Insurance Company, has asked holders of general mortgage bonds of this company to deposit them pursuant to action taken under the federal bankruptcy law. The Chemical Bank & Trust Co., New York, has been named as depository.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Notes.*—The Interstate Commerce Commission has authorized this company to issue not more than $515,000 of promissory notes to procure a part of the funds necessary for interest payments.

GREAT NORTHERN.—*Bonds.*—The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of $45,000,000 of general mortgage 6 per cent bonds, series F, in partial reimbursement of capital expenditures.

GULF, MOBILE & NORTHERN.—*Trackage Rights.*—The Interstate Commerce Commission has authorized this company to operate under trackage rights over the Illinois Central from Bemis, Tenn., to Paducah, Ky., 113 miles, and over certain terminal facilities of the Nashville, Chattanooga & St. Louis at Paducah and to abandon operation under trackage rights over the N. C. & St. L. between Jackson, Tenn., and Paducah, Ky., 145.3 miles.

KANSAS CITY TERMINAL.—*Use of Facilities by Wabash.*—Division 6 of the Interstate Commerce Commission has issued Service Order No. 54 directing this company until further order to permit the receivers of the Wabash to use the union passenger station and other terminal facilities at Kansas City under the terms of the operating agreement of June 12, 1909, and a supplemental agreement, pending an agreement, or finding of the commission if the parties fail to agree, in a controversy that has arisen as to the terms.

MARSHALL, ELYSIAN FIELDS & SOUTHEASTERN.—*R. F. C. Loan.*—Division 4 of the Interstate Commerce Commission has denied approval of this company's application for a loan of $60,000 from the Reconstruction Finance Corporation.

NEW YORK CENTRAL.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon 1.87 miles of line between Baldwin Place, N. Y., and Mahopac Falls. The line was originally constructed to serve iron mines which have been abandoned for many years and, in recent years, highway transport has taken most of the remaining business of the line.

ST. LOUIS-SAN FRANCISCO.—*Deposit Time Extended.*—The readjustment managers have extended to June 30 the limit for deposit of bonds under the reorganiza-

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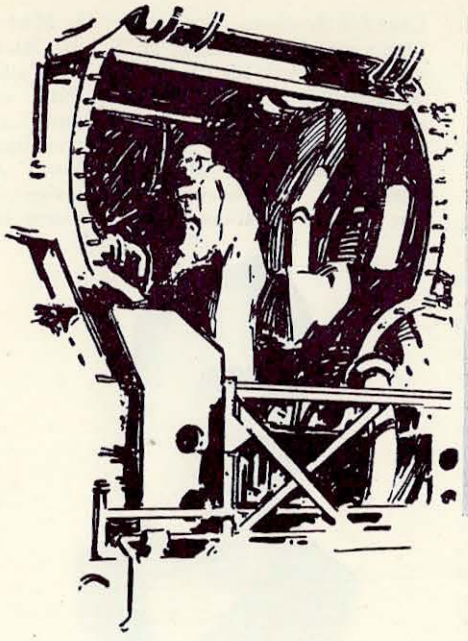
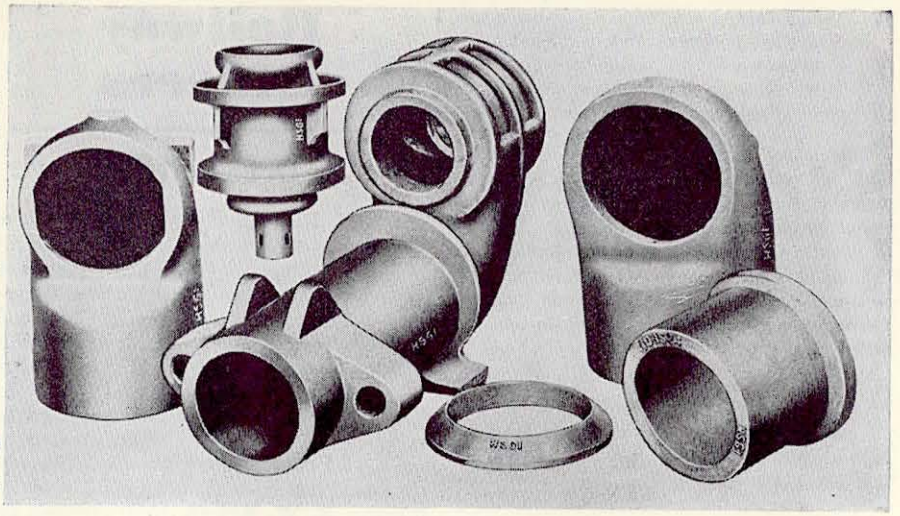




STEAM TIGHT . . DRY PIPES

WHY continue to put up with those expensive dry pipe repairs? Application of HUNT-SPILLER *Air Furnace* GUN IRON Fittings will solve this troublesome problem.

Consider the cost and time required for repairs—the service loss of the locomotive—the big savings possible by the prevention of failures.

Castings made of HUNT-SPILLER *Air Furnace* GUN IRON are free from foundry defects which are the basic cause of dangerous leaks. They are not affected by high temperatures.

Make sure your Dry Pipe Sleeves, Elbows, Stand Pipes and Throttle Boxes are made of this dependable material.

HSGI
Reg. U. S. Trade Mark

Cylinder Bushings
Cylinder Packing Rings
Pistons or Piston Bull Rings
Valve Bushings
Valve Packing Rings
Valve Bull Rings
Crosshead Shoes
Hub Liners
Shoes and Wedges
Floating Rod Bushings

Parts Finished For Application

Dunbar Sectional Type Packing
Duplex Sectional Type Packing for Cylinders and Valves
(Duplex Springs for Above Sectional Packing)
Cylinder Snap Rings
Valve Rings All Shapes

HUNT-SPILLER MFG. CORPORATION
J. G. Platt, Pres. & Gen. Mgr. V. W. Ellet, Vice-President.

Office & Works
383 Dorchester Ave. South Boston, 27, Mass.

Canadian Representative: Joseph Robb & Co., Ltd., 997 Aqueduct St., Montreal, P. Q.
Export Agent for Latin America:
International Rwy. Supply Co., 30 Church Street, New York, N. Y.

HUNT-SPILLER *Air Furnace* GUN IRON

tion plan. The consent of two-thirds of each class of security holders is required under the new federal bankruptcy law and this requirement, the readjustment managers state, has already been met.

SOUTHERN PACIFIC. — *Abandonment.* — The Interstate Commerce Commission has authorized this company and its lessor lines, the Arizona Eastern and the El Paso & Southwestern, to abandon the following branch lines in Arizona: Douglas-Cochise; Kelton-Gleeson; Kelton-Courtland; Pearce-Commonwealth Mill—an aggregate of 71.3 miles.

SOUTHERN PACIFIC.—*R. F. C. Loan Authorized.*—The directors of the Reconstruction Finance Corporation on May 25 authorized two loans to this company which had been approved by the Interstate Commerce Commission on May 9. One is a loan of $22,000,000 for the purpose of paying judgments, principal and interest of maturing equipment trust certificates, and interest on funded debt. The other is a "work loan" of $1,200,000 to be used in connection with the construction of a new passenger station and terminal facilities at Houston, Tex., which it is estimated will furnish 701,312 man-hours of employment for more than 20 crafts, in addition to employment in the industries with which orders will be placed. It was later announced that the loans had been authorized on condition that the company agree to reduce salaries.

TEXAS & PACIFIC.—*Bonds.*—It was erroneously reported in the issue of May 13 that this company had applied to the Interstate Commerce Commission for authority for the authentication and delivery of $19,730,000 of general and refunding mortgage bonds. The application was in fact a supplement to an original application dated December 9, 1930, on which the authority was granted, including the right to pledge $6,730,000 of the bonds through December 31, 1932. The supplemental application of May 9 merely requested an extension to December 31, 1934, of the time within which the company may pledge and repledge the $6,730,000 of bonds.

Average Prices of Stocks and of Bonds

	May 31	Last week	Last year
Average price of 20 representative railway stocks..	39.29	36.60	11.83
Average price of 20 representative railway bonds..	66.27	64.23	44.93

Dividends Declared

Carolina, Clinchfield & Ohio.—$1.00, quarterly; Guaranteed Certificates, $1.25, quarterly; both payable July 10 to holders of record June 30.

Chesapeake & Ohio.—62½c, quarterly, payable July 1 to holders of record June 8.

Dayton & Michigan.—8 Per Cent Preferred, $1.00, quarterly, payable July 5 to holders of record June 16.

Chestnut Hill.—75c, quarterly, payable June 5 to holders of record May 20.

Grand Rapids & Indianapolis.—$2.00, semi-annually, payable June 20 to holders of record June 10.

Illinois Central.—4 Per Cent Leased Line, $2.00, payable July 1 to holders of record June 12.

Little Miami. — Original Guaranteed, $1.10; Special Guaranteed, 50c, quarterly, both payable June 10 to holders of record May 26.

Louisville, Henderson & St. Louis.—5 Per Cent Preferred, 2½ per cent, semi-annually; Common, $4.00, semi-annually, both payable August 15 to holders of record August 1.

Norwich & Worcester.—8 Per Cent Preferred, 2 per cent, quarterly, payable July 1 to holders of record June 15.

Railway Officers

OPERATING

F. F. Riefel, superintendent of the Toledo division of the New York Central at Toledo, Ohio, has had his jurisdiction extended to include that part of the Cleveland division between Vickers, Ohio, and Berea. **W. H. Sullivan,** superintendent of the Cleveland Terminal district, has been appointed superintendent of the Cleveland division, which has been extended to embrace the Cleveland Terminal district, the Lake Erie & Pittsburgh branch between Cleveland and Youngstown and the Alliance branch. **E. W. Brown,** superintendent of the Cleveland division, with headquarters at Cleveland, has been transferred to the Ohio Central Lines, with headquarters at Columbus, Ohio, succeeding **L. S. Emery,** who has been appointed assistant superintendent of the Ohio Central Lines, with headquarters at Charleston, W. Va. **E. V. Brogan,** superintendent of the Erie division, with headquarters at Erie, Pa., has had his jurisdiction extended to include the Franklin division, with the exception of the Youngstown (Ohio) terminal. **J. R. Todd,** superintendent of the Franklin division, with headquarters at Youngstown, has been appointed superintendent of the Youngstown terminals of the New York Central and the Pittsburgh & Lake Erie.

PURCHASES AND STORES

H. C. Young, assistant to the purchasing agent of the Delaware & Hudson, has been appointed assistant purchasing agent, with headquarters at Albany, N. Y., and his former position has been abolished. **C. Miles Burpee,** purchasing engineer has been appointed research engineer, a newly created position, with headquarters at Albany, N. Y., which includes the former duties of purchasing engineer and tie and lumber agent. The latter positions have been abolished.

TRAFFIC

Albert B. Wallace, assistant freight traffic manager of the Delaware, Lackawanna & Western, has been appointed assistant to the general freight traffic manager and **Maurice Williams,** general freight agent, has been appointed to succeed Mr. Wallace as assistant freight traffic manager. **William J. Daily,** assistant general freight agent, has been appointed general freight agent succeeding Mr. Williams. **J. F. Rydene,** coal freight agent, has been appointed general coal freight agent succeeding **Edward S. Giles,** deceased. The headquarters of these officers will be at New York. Mr. Wallace was born in Gault, Ont., and entered railway service as a messenger boy for the Great Western of Canada (now the Canadian National) at Hamilton, Ont. He subsequently served in a similar position on the Canadian Southern (now part of the Michigan Central) at Buffalo, N. Y. He later served as a clerk for the Chicago, St. Paul, Minneapolis & Omaha at St. Paul, as stenographer for the Illinois Central at New Orleans, La., and as stenographer and chief clerk for the Michigan Central at Buffalo, N. Y. He entered the service of the Delaware, Lackawanna & Western in

Albert B. Wallace

1889, as chief clerk in the general freight traffic department at New York, later being promoted to assistant general freight agent. He was appointed general freight agent in 1926, and in 1929 he became assistant freight traffic manager.

Mr. Williams was born in Leamington, England. He entered railway service with the London & Northwestern at Liverpool, Eng., coming to America in 1898, and entering the freight department of the Missouri Pacific at Kansas City. In 1902 he came east and served in a similar capacity with the Erie. The following year he

Maurice Williams

served in the billing office of the Old Dominion Steamship Company in New York and in 1906 he was rate clerk for the Mallory Steamship Line at the same point. He entered the service of the Delaware, Lackawanna & Western in October, 1907, as rate clerk in the general freight traffic department. He was appointed chief clerk in 1909 and in 1918 he was made assistant to the freight traffic manager. On March 1, 1920, Mr. Williams was appointed assistant general freight agent, and in April, 1929, he was appointed general freight agent.

Annual Report of the New York Central Railroad Company

To the Stockholders of
THE NEW YORK CENTRAL RAILROAD COMPANY:

The Board of Directors herewith submits its report for the year ended December 31, 1932, with statements showing the income account and the financial condition of the company.

The Year's Business

The continued unfavorable business conditions throughout the year are reflected in the substantial decreases in freight and passenger traffic.

Operating revenues were $293,636,140.28, a decrease of $88,554,042.61 (23.17%).

Revenue freight handled amounted to 86,322,846 tons, a decrease of 27,428,104 tons (24.11%), the revenue therefrom being $193,328,131.69, a decrease of $52,568,955.65 (21.38%).

The company carried 50,781,188 revenue passengers, a decrease of 12,385,723, the distribution being: interline passengers 498,422, a decrease of 20.86%, local passengers 3,494,430, a decrease of 23.09% and commutation passengers 8,392,871, a decrease of 18.39%. Revenue from passengers amounted to $60,151,921.88, a decrease of $26,152,586.08 (30.30%).

Net railway operating income was $20,812,987.33, a decrease of $7,262,591.23. Operations for the year resulted in an income deficit of $18,256,400.08, after deduction of charges for depreciation and retirements amounting to $23,123,110.56, as compared with net income of $2,430,101.13 in 1931.

Income Account for the Year

Including Boston & Albany Railroad, Ohio Central Lines, Michigan Central Lines, and Big Four Lines

	Year ended Dec. 31, 1932	Year ended Dec. 31, 1931	+ Increase or − Decrease
OPERATING INCOME	11,438.32 *miles operated*	11,388.48 *miles operated*	+49.84 *miles*
RAILWAY OPERATIONS			
Railway operating revenues	$293,636,140.28	$382,190,182.89	−$88,554,042.61
Railway operating expenses	227,176,620.18	307,065,680.57	−79,889,060.39
NET REVENUE FROM RAILWAY OPERATIONS	$66,459,520.10	$75,124,502.32	−$8,664,982.22
Percentage of expenses to revenues	(77.37)	(80.34)	−(2.97)
Railway tax accruals	$30,083,641.76	$32,215,328.92	−$2,131,687.16
Uncollectible railway revenues	90,672.27	102,942.29	−12,270.02
RAILWAY OPERATING INCOME	$36,285,206.07	$42,806,231.11	−$6,521,025.04
Equipment rents, net debit	$11,281,581.30	$11,772,767.61	−$491,186.31
Joint facility rents, net debit	4,190,637.44	2,957,884.94	+1,232,752.50
NET RAILWAY OPERATING INCOME	$20,812,987.33	$28,075,578.56	−$7,262,591.23
MISCELLANEOUS OPERATIONS			
Revenues	$745,324.36	$909,761.13	−$164,436.77
Expenses and taxes	683,470.06	828,709.31	−145,239.25
MISCELLANEOUS OPERATING INCOME	$61,854.30	$81,051.82	−$19,197.52
TOTAL OPERATING INCOME	$20,874,841.63	$28,156,630.38	−$7,281,788.75
NON-OPERATING INCOME			
Income from lease of road	$126,361.35	$162,612.99	−$36,251.64
Miscellaneous rent income	4,785,431.96	5,993,993.85	−1,208,651.89
Miscellaneous non-operating physical property	3,545,802.10	3,664,353.75	−118,551.65
Separately operated properties—profit	139,478.82	336,321.20	−196,842.38
Dividend income	6,817,340.28	16,143,262.36	−9,325,922.08
Income from funded securities and accounts	5,218,299.23	5,504,934.06	−286,634.83
Income from unfunded securities and accounts	2,562,572.74	3,566,470.35	−1,003,897.61
Income from sinking and other reserve funds	186,308.55	187,565.87	−1,257.32
Release of premiums on funded debt	33,410.41	31,056.76	+2,353.65
Miscellaneous income	207,175.31	144,670.01	+62,505.30
TOTAL NON-OPERATING INCOME	$23,622,180.75	$35,735,241.20	−$12,113,060.45
GROSS INCOME	$44,497,022.38	$63,891,871.58	−$19,394,849.20
DEDUCTIONS FROM GROSS INCOME			
Rent for leased roads	$25,659,829.82	$26,383,108.64	−$723,278.82
Miscellaneous rents	1,504,886.57	1,495,709.56	+9,177.01
Miscellaneous tax accruals	2,515,288.29	1,936,442.32	+578,845.97
Separately operated properties—loss	93,906.98	114,193.86	−20,286.88
DEDUCTIONS FROM GROSS INCOME (CON.)			
Interest on funded debt	28,348,689.95	28,159,311.42	+189,378.53
Interest on unfunded debt	3,988,230.47	2,067,979.83	+1,920,250.64
Amortization of discount on funded debt	471,457.35	508,949.31	−37,491.96
Maintenance of investment organization	18,251.04	14,922.25	+3,328.79
Miscellaneous income charges	152,881.99	781,153.26	−628,271.27
TOTAL DEDUCTIONS FROM GROSS INCOME	$62,753,422.46	$61,461,770.45	+$1,291,652.01
NET DEFICIT (INCOME FOR 1931)	$18,256,400.08	$2,430,101.13	+$20,686,501.21
Sinking and other reserve funds	$65,418.35	$119,913.33	−$54,494.98
Income appropriated for investment in physical property	.....	100.00	−100.00
Miscellaneous appropriations of income	4,731.69	833.46	+3,898.23
TOTAL APPROPRIATIONS OF INCOME	$70,150.04	$120,846.79	−$50,696.75
DEFICIT FOR THE YEAR (SURPLUS FOR 1931)	$18,326,550.12	$2,309,254.34	+$20,635,804.46

Profit and Loss Account

BALANCE TO CREDIT OF PROFIT AND LOSS, DECEMBER 31, 1931		$267,691,835.49
ADDITIONS:		
Profit on securities sold (net)	$25,416.97	
Profit on property sold (net)	5,056,763.89	5,082,180.86
		$272,774,016.35
DEDUCTIONS:		
Deficit for the year 1932	$18,326,550.12	
Depreciation prior to July 1, 1907 on equipment retired during the year	384,220.71	
Loss on property retired	510,340.33	
Unamortized discount on funded debt	13,100,659.54	
Accounting adjustments in connection with sundry properties in Grand Central Terminal area	1,677,902.33	
Sundry adjustments (net), unrefundable overcharges and uncollectible accounts	149,822.22	34,149,495.25
BALANCE TO CREDIT OF PROFIT AND LOSS, DECEMBER 31, 1932		$238,624,521.10

Operating Expenses

Operating expenses were as follows:

Group	Amount	Increase	Decrease
Maintenance of way and structures	$28,286,248.54		$20,105,604.57
Maintenance of equipment	64,786,861.43		16,723,063.67
Traffic expenses	6,788,434.85		2,074,395.63
Transportation expenses	110,546,896.83		35,754,652.09
Miscellaneous operations	4,197,334.56		2,053,232.87
General expenses	12,615,284.45		3,382,216.28
Transportation for investment—credit	44,440.48	$204,104.72	
Total	$227,176,620.18		$79,889,060.39

West Side Improvements, New York City

The work involved in the removal of the tracks from their cross and longitudinal occupation of the city streets to a privately owned right of way at grades separated from the streets has progressed and has been concentrated in the territory from 30th Street south with the idea of completing that portion of the improvements so as to have it available for service by the latter part of the year 1933.

Pre-cooling and Air Conditioning of Passenger and Dining Cars

In order to create a greater degree of comfort for passengers during both day and night travel in the summer months in the principal trains, a total of two hundred pre-cooling machines were installed in July at New York, Buffalo, Cleveland, Detroit, Pittsburgh, Chicago, Cincinnati, Indianapolis and St. Louis. This equipment withdraws the warm air and forces cleaned, cooled and dehumidified air into the cars. Air conditioning equipment was installed in July upon fifteen dining cars operated between New York and Chicago and New York and St. Louis.

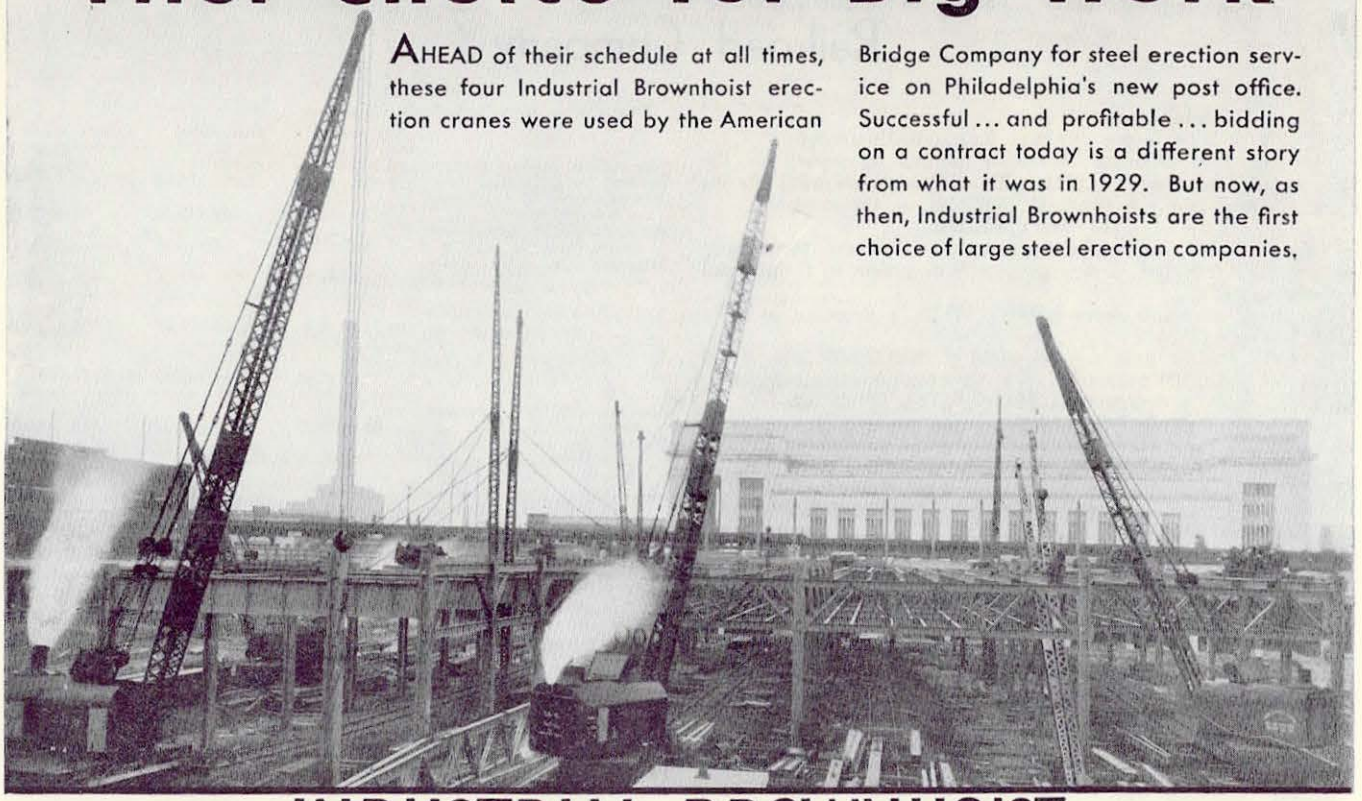
The Board wishes to express its appreciation of the loyal and efficient service of the officers and employees of the company during the year. For the Board of Directors,

F. E. WILLIAMSON,
President.

[Advertisement]

First Choice for Big Work

AHEAD of their schedule at all times, these four Industrial Brownhoist erection cranes were used by the American Bridge Company for steel erection service on Philadelphia's new post office. Successful ... and profitable ... bidding on a contract today is a different story from what it was in 1929. But now, as then, Industrial Brownhoists are the first choice of large steel erection companies.



GENERAL OFFICES: BAY CITY, MICHIGAN

INDUSTRIAL BROWNHOIST

NEW YORK, PHILADELPHIA, CLEVELAND, CHICAGO

From the Early Period of the Telegraph to the present remarkable development in the field of Electricity

KERITE

has been continuously demonstrating the fact that it is the most reliable and permanent insulation known

THE KERITE INSULATED WIRE & CABLE COMPANY INC

NEW YORK CHICAGO SAN FRANCISCO

MAGNUS COMPANY

(INCORPORATED)

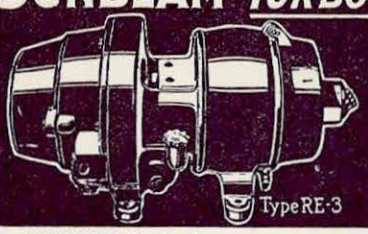
Journal Bearings

AND

Bronze Engine Castings

New York Chicago

SUNBEAM TURBO-GENERATORS



FOR SERVICE, SAFETY, ECONOMY

RANGING in size from 500 to 4000 watts, Sunbeam Turbo Generators have demonstrated their uniform dependability in every country of the world where locomotives are in use. Easily accessible for adjustments, they keep labor costs low and their sturdy construction makes large repair part stocks unnecessary. Backed by almost half a century of locomotive lighting experience, they combine three locomotive equipment essentials—service, safety and economy.

SUNBEAM ELECTRIC MFG. CO.
NEW YORK SAN FRANCISCO PHILADELPHIA EVANSVILLE, INDIANA, U. S. A. DENVER RICHMOND INDIANAPOLIS

"Arctic" BRONZE CROWN BEARINGS

CHILL CAST

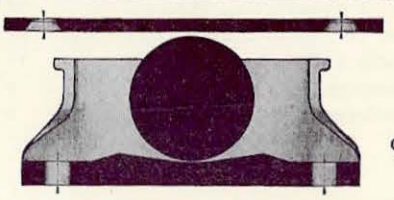
METAL MOULDS (Patented)

WRITE FOR PRINT LISTING SIZES
NATIONAL BEARING METALS CORP.
ST. LOUIS, MO.
New York, N. Y. Jersey City, N. J. Pittsburgh, Pa. Meadville, Pa. Portsmouth, Va. St. Paul, Minn.

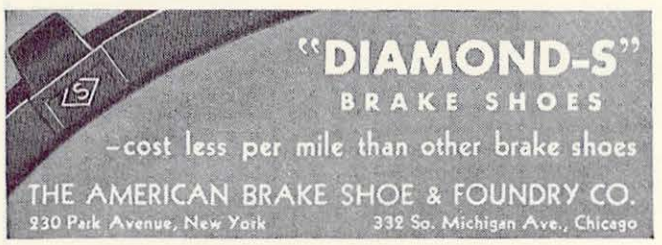
WINE RAILWAY APPLIANCE CO.
TOLEDO, OHIO

Details of our products appear in following issues of Railway Age during 1932

January 16—March 19—May 21—August 13—September 17—November 19—or Railway Mechanical Engineer.



STUCKI SIDE BEARINGS
Manufactured by
A. Stucki Co.
Oliver Bldg., Pittsburgh, Pa.
Canadian Representative:
The Holden Co., Ltd.,
Montreal, Can.


"DIAMOND-S"
BRAKE SHOES
-cost less per mile than other brake shoes
THE AMERICAN BRAKE SHOE & FOUNDRY CO.
230 Park Avenue, New York
332 So. Michigan Ave., Chicago

Pittsburgh Spring & Steel Co.
1417 Farmers Bank Building, Pittsburgh, Pa.
Makers of Elliptic and Spiral **SPRINGS** of Every Description
Carbon, Vanadium, Silico-Manganese Steels.
Licensed manufacturers under patents for "Coil-Elliptic" groupings.
Washington, D. C. 824 Union Trust Bldg.
New York 3723 Grand Central Terminal
Chicago 1405 Fisher Bldg.

BARBER LATERAL - MOTION DEVICE
1,300,000 cars equipped
ROLLER SIDE-BEARINGS
STANDARD CAR TRUCK CO.
McCORMICK BUILDING CHICAGO

This shoe does the work while your engines and cars are in service.
SAVES TIME
SAVES LABOR
SAVES MONEY
WHEEL TRUING BRAKE SHOE CO.
Detroit Michigan

GET TOGETHER DEPARTMENT

Non-Display "Employment" Ads five cents a word. Count address in figuring cost. Box number requires ten words. All other classified Ads $4.00 an inch (1" x 1⅝") an insertion. Payable in advance. Railway Age, 30 Church St., New York, N. Y.

Your classified advertisement should appear in this section.

EDUCATIONAL

THE Railway Educational Bureau, Omaha, Neb., offers a distinctive education service for Supervisors and other employes. Write for FREE Special Bulletin.

Use space in this section

POSITION OPEN

IF YOU are open to overtures for new connection, and qualified for a salary between $2,500 and $25,000, your response to this announcement is invited. The undersigned provides a thoroughly organized service of recognized standing and reputation, through which preliminaries are negotiated confidentially for positions of the calibre indicated. The procedure is individualized to each client's personal requirements; your identity covered and present position protected. Established twenty-three years. Send only name and address for details. R. W. Bixby, Inc., 102 Delward Building, Buffalo, New York.

Index to Advertisers

June 3, 1933

A

American Arch Co., Inc. 19
American Brake Shoe & Foundry Co., The 25
American Locomotive Co. 21
American Spiral Spring & Manufacturing Co. 13
American Steel Foundries 9
Association of Manufacturers of Chilled Car Wheels ... 2

B

Baldwin Locomotive Works, The 6
Barco Manufacturing Co. 27
Bixby, Inc., R. W. 25

C

Classified Advertisements 25

D

Dearborn Chemical Co. 12

E

Edgewater Steel Co. 10

F

Franklin Railway Supply Co., Inc. 18

G

General Steel Castings Corp. 7
Get Together Department 25

H

Harbison-Walker Refractories Co. 19
Hunt-Spiller Manufacturing Corp. 23
Hutchins Car Roofing Co. 16

I

Industrial Brownhoist Corp. 24

K

Kerite Insulated Wire & Cable Co. 24

L

Lima Locomotive Works, Inc. 17
Lockhart Iron & Steel Co. 8
Locomotive Firebox Co. 11

M

Magnus Company, Inc. 24
Miner Inc., W. H. 3

N

National Bearing Metals Corp. 25

P

Pittsburgh Spring & Steel Co. 25
Portland Cement Association 15
Professional Directory 25
Pullman Car & Manufacturing Corp. 4

R

Railway Educational Bureau, The 25
Republic Steel Corporation 22

S

Simmons-Boardman Publishing Co. 14
Standard Car Truck Co. 25
Stucki Company, A. 25
Sunbeam Electric Manufacturing Co. 25
Superheater Co., The 20

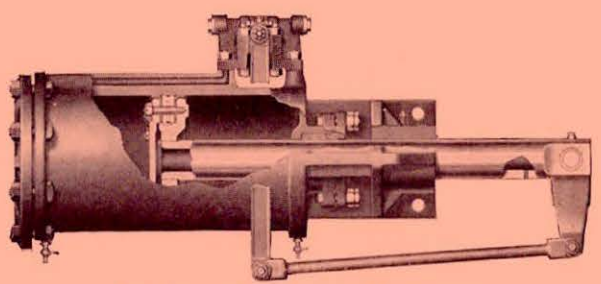
T

Timken Roller Bearing Co. ..... Front Cover

W

Westinghouse Air Brake Co. 28
Wheel Truing Brake Shoe Co. 25
Wine Railway Appliance Co. 25

LET US CALL YOUR.... ATTENTION



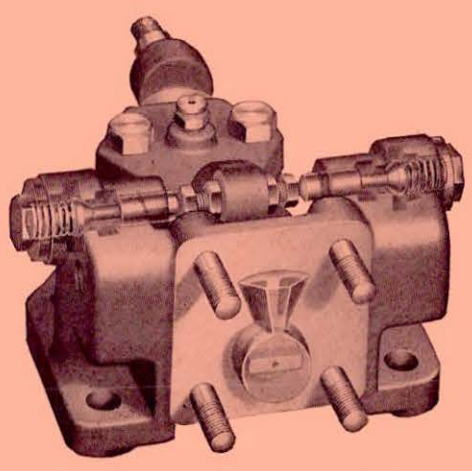
Interior view type M-1 gear. Note sturdy construction, well-balanced design and hollow piston rod.

to the following features of the new BARCO POWER REVERSE GEAR, type M-1.

Piston rod guide an integral part of the cylinder located directly opposite front bolting lug.

Hollow trunk piston rod prevents pressure from building up between packing cups and provides easy inspection.

Large cylinder provides ample power for big locomotives at no additional cost.



Interior view dual control valve.

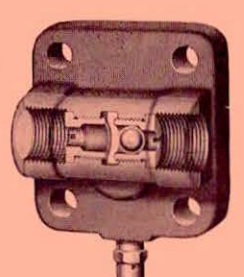
Dual control operating valve insures close selection of cut-off and accurately maintains position selected.

The combination of poppet and small rotary valve accomplishes precision control and reduces maintenance.

All BARCO REVERSE GEARS may be equipped with separate inlets for air and steam with monel metal ball check between these inlets.

BARCO
M-I Power Reverse Gears

have standard bolting lugs suitable for either 8″ x 16″ or 7½″ x 28¼″ centers. Furnished for right or left hand application.



Interior view of ball check cap.

Barco Manufacturing Co.

1801 Winnemac Avenue, Chicago, Illinois

THE HOLDEN CO., LTD.

In Canada
Montreal—Moncton—Toronto

In Canada
Winnipeg—Vancouver

BARCO

The NEW "AB" FREIGHT BRAKE

LOWERS INSPECTION and MAINTENANCE COSTS

RELATIVELY simple construction, durable working parts, readily accessible, with ample protection against leakage and dirt, assure dependable and consistent brake performance over long periods with minimum cost for maintenance . . . Improved Dirt Collector, combined with cut out cock, reduces brake pipe volume and eliminates pipe joints . . . Special form of Strainer protects packing rings and slide valves from fine abrasive dirt . . . Re-enforced Flanged Unions insure permanently air-tight joints and eliminate pipe failures . . . Bracket mounting of the Valve permits removal of service or emergency portion without disturbing pipe connections . . . The Brake Cylinder has a special form of WABCO packing cup that eliminates follower plate and bolts with their attendant leakage. Piston rod is equipped with packing rings to prevent entrance of dirt and moisture. A felt swab in the piston head assembly lubricates the cylinder walls. The cylinder may be relubricated from the outside without dismantling.

All mechanical improvements of the equipment combine to make practicable the *extension of time between cleaning periods* and insure greater uniformity and dependability of brake performance. . . .

This Advertisement is No. 5 of a Series.

WESTINGHOUSE AIR BRAKE CO.

General Office and Works, Wilmerding, Penna.

(1239)